

Thos. J. Long.
Jan. 28th 1878.

CITY OF NEW YORK.

DEPARTMENT OF DOCKS.

ANNUAL REPORT.

APRIL 30, 1877.

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SEVENTH
ANNUAL REPORT
OF THE
DEPARTMENT OF DOCKS,

FOR THE YEAR ENDING APRIL 30, 1877

NEW YORK:
EVENING POST STEAM PRESSES, 208 BROADWAY, COR. FULTON ST.

1878.

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REPORT.

DEPARTMENT OF DOCKS, }
Nos. 117 AND 119 DUANE STREET, }
NEW YORK, 1st May, 1877. }

To the Honorable SMITH ELY, JR.,

Mayor of the City of New York:

SIR—Pursuant to the provisions of subdivision 9 of section 6, of chapter 574, Laws of 1871, the Board of Commissioners governing the Department of Docks submits this report of its transactions from the 1st of May, 1876, to the 30th of April, 1877, being its Seventh Annual Report.

The following named Commissioners compose the present Board—

SALEM H. WALES,
JACOB A. WESTERVELT,
HENRY F. DIMOCK.

The law provides that the report shall contain :

First.—The name, occupation and compensation of all persons appointed and employed by said Board.

Second.—A statement of the action of the Board for the past year, classified with reference to the various subjects and duties which have engaged the attention of the Board.

Third.—A list of the Orders and Rules made by said Board, and a description of the contracts made by said Board ; the payments made by said Board, and the purposes and amounts thereof ; and the leases made by said Board, for what term, at what rent, to whom and for what property.

FIRST.

The following is a list of the names and occupation of all persons appointed and employed by the Board, with their respective salaries :

NAMES.	OCCUPATION.	COMPENSATION.
Eugene T. Lynch.....	Secretary.....	\$4,000 00 p. annum.
William W. Burnham...	Bookkeeper.....	3,000 00 "
William M. Whitney....	Chief Clerk....	3,000 00 "
William McConkey.....	Supt. of Docks.....	2,000 00 "
James Fitzpatrick.....	" "	2,000 00 "
John M. Smith.....	" "	2,000 00 "
John Butler.....	" "	2,000 00 "
Otho H. Klemm.....	Clerk to Auditing Com.	2,000 00 "
Joseph T. Kelly.....	Assistant Bookkeeper..	150 00 p. month.
Thomas Early.....	Messenger.....	1,000 00 p. annum.
George S. Hunt.....	"	10 00 p. week.
Eugene Conkling.....	Office Boy.....	10 00 "
Hugh Fitzpatrick.....	Night Watchman.....	2 25 p. day.

OFFICE OF ENGINEER-IN-CHIEF.

George S. Greene, Jr....	Engineer-in-Chief.....	\$6,000 00 p. annum.
Willard A. Nichols.....	First Assist. Engineer.	3,600 00 "
William W. Maclay.....	Assistant Engineer....	2,500 00 "
Charlton B. Kid.....	" "	2,500 00 "
Thomas Murphy.....	Supt. of Masonry Con..	3,000 00 "
Herman Winter.....	Eng'r of Float. Prop'ty.	125 00 p. month.
James Guthrie.....	Supt. of Construction..	2,500 00 p. annum.
Patrick White.....	Foreman Dockbuilders.	2,000 00 "
David T. Keiller.....	Draughtsman.....	1,800 00 "
Thomas J. Long.....	"	100 00 p. month.
Moses S. Barrett.....	Surveyor.....	1,500 00 p. annum.
Charles W. Raymond....	Leveler.....	75 00 p. month.
John H. Staats.....	Transitman.....	1 000 00 p. annum.
Robert M. Kid.....	Assistant Draughtsman.	3 00 p. day.
William Livingstone....	" "	3 00 "
John K. Murphy.....	Copyist.....	10 00 p. week.
Frederick Lange.....	Messenger.....	12 00 "
James O'Brien.....	Roundsman.....	100 00 p. month.

2d June, 1876.—Willard A. Nichols appointed First Assistant Engineer.

28th July, 1876.—Charles W. Raymond appointed Leveler.

16th August, 1876.—Moses S. Barrett appointed Surveyor, vice Robert P. Staats, resigned, to take effect 25th inst.

18th August, 1876.—Salary of George S. Greene, Jr. Engineer-in-Chief, increased to \$6,000 per annum, to take effect from and after 1st inst.

20th September, 1876.—John H. Staats designated as Transitman, to take effect from and after 18th inst.

14th February, 1877.—Hugh Fitzpatrick appointed, Night Watchman, vice William R. Thornton, removed to take effect from 10th inst. inclusive.

SECOND.

The Board submits the following statement of the subjects and duties which have engaged its attention during the year ending April 30th, 1877 :

I.—Organization.

An annual election for officers of the Board to serve for the ensuing year was held on 1st May, 1876, in compliance with the by-laws, and Commissioner Wales was re-elected President, and Commissioner Westervelt authorized to act as Treasurer *pro tempore*, and

to perform all the duties pertaining to the office of Treasurer until the election of that officer.

The following Standing Committees were appointed by the President for the ensuing year :

Executive Committee.—Commissioners DIMOCK and WESTERVELT.

Auditing Committee.—Commissioners WESTERVELT and DIMOCK.

October 18, 1876.—By-laws amended by altering the wording of *Sec. 1 Art. IX*, and *Sec. 2 Art. XV*, having reference to the manner of drawing orders for materials and supplies.

II.—General Duties.

The extent and variety of the operations of this Department are subjects so little understood by the public, that a very brief notice of them, simply by way of illustration, will not be inappropriate.

The water front of this city is about $37\frac{1}{2}$ miles in extent. Many miles of this belong to the Corporation. The balance, which is the larger part, is either the property of private parties or is involved in controversy.

The whole extent of water front, whether owned by the Corporation or by private parties, is under the exclusive government and regulation of this Department.

As to the city's property, amounting in value to many millions of dollars, this Board has the duty of building, repairing, maintaining, leasing it, and collecting its large revenues. As to that large part of it which cannot be leased this Board is obliged to collect the wharfages from vessels using the property daily. This requires the presence of collectors on every part of this great distance.

This Board is charged with the dredging of all this property so far as the slips are concerned, and in every way preserving it in condition for its efficient commercial use. There are few such properties in the world, considered either in reference to present and prospective value or to importance to the vast commercial business depending on it.

With regard to that portion of the water front not owned by the Corporation, the duties of this Board are very large and important, and consist among other things in seeing that the necessary repairs are made to the structures by the owners and the necessary dredging done by them. All this involves constant examination and supervision.

The foregoing duties are such as pertain to the use and management of our water front considered as property.

The piers and wharves of this city, however, whether owned by the Corporation or by private parties, are held for public use.

The government and regulation of the piers, wharves, and slips of the City of New York is a matter of legislative control by the State, through its Legislature, and such subordinate legislative bodies as may be created by law.

The franchises of collecting wharfage or rent for the use of the wharves and piers has been restricted in its exercise, so as to permit only the free public use, without encroachment, for the benefit of all the people of the State.

Thus this Department is vested with the power to make rules and regulations (in reality laws) as to the use of all this water front. Every question as to the erection of any structure required by the demands of commerce must be passed upon by this Department.

No shed, or any other facility required by our commerce, can exist, except when determined by the Board to be for the general benefit of commerce, and under such regulations and restrictions as may conduce to the public good. No terminal facilities, such as elevators and the like, can be built except under the same conditions.

The Department is vested also with the exclusive legislative power to set aside special districts for special kinds of commerce.

All these subjects are cited merely by way of example to show the vast legislative functions which have been devolved by the Legislature on this Board, and which take up so large a share of its time.

The Legislature of the State was formerly accustomed to act on all these matters in single instances as they arose, and never parted with many of these powers until they were devolved on this Board as a legislative body.

The Legislature devolved these powers on this Board, in view of the fact that the questions were constantly arising and the power must be exercised in emergencies, upon examination and deliberation, and that kind of scrutiny which a body of men adapted to the business by daily familiarity and contact with the subject and the persons and interests affected, can alone exercise.

These powers were devolved on a board instead of an individual so that the public might have the protection of the legislative method: open hearing and public decision after deliberation.

The matters of a legislative character passed on by this Board annually would probably nearly equal in number those which come before a State Legislature.

In addition to the care of all this property as property, and to the transaction of all this mass of legislative business, this Department is charged with the duty of re-building the wharves and piers of this city, on a new plan, and with the building of a permanent Bulkhead Wall.

III.—Operations on the Water Front.

PIER NEW No. 1, NORTH RIVER.—Pier new No. 1, North river, has been finished during the year and thrown open to the public use. This is the stone pier, about which so much public discussion has been had. It was in process of construction when the present Commissioners entered office, and has been completed, after having been shortened about fifty feet from its original plan. A large item of yearly expenditure has thus been stopped.

The Commission do not anticipate that any more stone piers will be built in this city.

NEW PIERS BUILT.—During the year the following wooden piers have been built :

Pier new No. 42, North river, 75×570 feet, completed in October, 1876. This pier has been leased for \$30,000 per annum.

Pier old No. 49, North river, extended by new work, 60 feet wide by 149 feet long.

Pier new No. 39, North river, 75 feet wide and 580 feet long, commenced December, 1876, and is about three-fourths finished. The agreement to lease this pier for \$30,000 per annum has been made.

BULKHEAD WALL.—In the last annual report of this Department, and in a special report made by Gen. John Newton, Gen. Q. A. Gilmore, and William E. Worthen, to this Department, and published during

the year, certain defects, in a small portion of the wall (about 347 feet), constructed by Gen. Graham, the former Engineer-in-Chief of the Department, were set forth. As was there explained, this wall was built, mostly by a former Board of Commissioners.

The eminent engineers above named united in recommending certain strengthening of this wall. During the year those recommendations have been carried out, as will appear in detail from the report of George S. Greene, Jr., Engineer-in-Chief of this Department, herewith transmitted.

As far as can be judged at present, this work seems likely to accomplish the purpose for which it was intended.

NEW WALL.—There were several pieces of wall between Canal and Christopher streets, in different stages of construction, under what may be termed the plan of Gen. Graham, at the date of the last report. These pieces of wall, amounting to about 600 feet, have been carried to completion (or nearly so), in accordance with plans recommended by the Board of expert engineers above named. Details of all this work will be found in the report of Chief Engineer, George S. Greene, Jr., hereto attached.

NEW PLAN WALL.—On April 5th, 1876, Mr. Greene, our Chief Engineer, submitted to the Board an elaborate plan for a new wall, suitable for the section of the city between Morton and Warren streets, a section with great depth of soft mud.

This plan was adopted formally by the Board after careful consideration, and consultation with experts.

In the report of Mr. Greene, above referred to, a very careful description of this plan is given, to which your attention is respectfully called.

About 114 feet of this wall has been substantially completed at the new King street section, and about 270 feet of it are in process of construction at the date of this report.

The cost of this first section, which is upon the most difficult and expensive part of the territory within the limits for which this wall is intended, has been \$263.04 per lineal foot. Some general expenses of the Commission, difficult of precise apportionment, have not been charged to this wall, as the object was to compare the cost of this wall with any other, or with crib work, and those general expenses are common to all such structures.

This first wall has been more expensive than the subsequent wall to be built, for many reasons :

1st. The experience gained by actual construction of this first part, will enable many elements of it to be cheapened in future.

2d. The old material on hand at high prices which had to be worked up, constitutes a large item of increase over the present prices.

3d. By availing ourselves of the contract system in many of the processes, large savings are being effected. One instance of this may be cited. When the Department was buying granite by contract and cutting it by day's work, it was found that the granite ready for use cost about \$1.65 per cubic foot, neat measurement. By lessening the cutting, and buying the granite cut, ready for use, by contract, it was obtained for 62 cents per cubic foot, neat, or over 62 per cent. less.

4th. The character of the bottom, as to depth of mud, quantity of dredging to be done, length of piles to be used, and many other items of cost in the remaining portions of this section, is accurately known to the Department, both by careful examination and by actual experience of work done in different portions.

From these last named causes, the saving to be confidently expected in the future can be quite accurately determined.

A careful computation of the average cost of this new wall for the whole section named, will be found in Mr. Greene's report, and we confidently expect that such average cost will not exceed \$200 per lineal foot.

This would not exceed the cost of a first-class crib-work wooden bulkhead for this section by more than \$50 per lineal foot, it is believed.

We invite careful attention to this new plan of wall, in the confident belief that it is a great improvement over the wall formerly built, in cost, in strength, and in the important particular, that there is scarcely any under-water work necessary comparatively.

This last fact is shown where it is seen that the whole bill for divers' services was only \$7.08 per lineal foot. The concrete is made entirely in the open air.

By this plan a cheap wall is constructed, the masonry is made in open air, and these things are done without any necessity of resort to any system of cofferdam, a device which is never used when these things can be secured with any economy otherwise, and which is always attended with many expenses and difficulties.

REPAIRS.—The Department has repaired many piers and bulkheads during the year, a detailed account of which will be found in the Engineer's report.

FLOATING PROPERTY.—The floating property of the Department has been handled with greatly increased economy and efficiency during the past year, and is now in good condition. The repairs during the year have cost an unprecedentedly small amount, when the present condition of the property is considered, and have been made in large part by the officers and crews attached to the property. It is proper to say that this result is due very largely to the fact, that

the city has had the great advantage of the services of Mr. Herman Winter, in supervising this property during the past year. This Department however has had under consideration for some time the advisability of laying up its floating property, and getting its dredging and other work all done by contract. It is probable that this will soon be done.

DREDGING.—During the year about 200,000 cubic yards of dredging has been done by the forces of this Department.

SURVEYS.—Surveys of great value to the city, and maps have been made during the year. A detailed account of the work of the surveying party will be found in the report of the Engineer-in-Chief.

IV.—Revenues, Expenses, Etc.

The expenses of this Department, for the year, for all purposes are, on account of Construction, \$397,425.45 ; and on account of General Expenses, \$35,664.35, making a total of \$433,089.80.

This is a much smaller sum than has been usually expended by the Department, and it is believed that the city will derive an increased income of at least 15 per cent on the whole amount by reason of these expenditures, notwithstanding the large portions of the sum properly chargeable to maintenance and general expenses.

Very great economies have been introduced into the Department in every branch, the office and general expenses alone have been reduced in the last two years, from \$76,817.32 in 1875, to \$35,664.35 in 1876. Many employés have been dispensed with, and the whole service has increased largely in healthy business efficiency.

The revenues of the Department during the past year have amounted to \$652,796.62 or about \$219,706.-82 more than the total expenditures made by the Department in the year, notwithstanding that the expenses were mainly for permanent improvements.

This Department has thus decreased the debt of this city during the year by \$219,706.82.

It will thus be seen how erroneous is what seems to be quite a prevailing opinion that this Department is actively engaged at present in increasing the city debt.

The opinion is based probably in part on the fact that the law requires all the expenses of every kind incurred by the Department to be met by the issue of Dock bonds. But, as the law also requires that all the revenues of the Department shall be paid into the Sinking Fund for the redemption of the city debt, it follows that this Department has actually paid \$219,-706.82 more debt during the past year than it has incurred.

The revenue for 1876 coming from dock and slip rents amounts to \$650,395.05. This is the amount

actually deposited with the City Chamberlain. The rentals which have accrued in the year have exceeded this sum by about \$50,000, which is in arrears, and is in process of collection by the Corporation Counsel.

The increase in the revenue of last year, over 1871, the first year after the establishment of the Department, has been \$300,000, without considering the \$50,000 due from last year's rent, but not collected.

It should be remembered, too, that this has taken place, in a period when rentals from all other kinds of property have very largely diminished by reason of the great depression in business. Had it been otherwise, the revenues of this Department would have shown a very much larger increase.

V.—Policy of the Department.

The policy of the Department is to complete, as soon as possible, the entire section between Canal and West Eleventh streets, thus showing what the nature of these proposed improvements are.

Below that point, the Department intend soon to enter on some improvements, where the contracts for rentals already made will yield an increase of revenue to the city, by reason of the improvements, of 20 per cent. or upwards on the amount to be expended.

The great difficulty in the way of very rapid improvement of the water front, is not that the plan

adopted is not capable of being carried out with any speed that may be desired and with economy, but is the fact that the city pier property is so separated by intervening private property, that it is difficult to secure sufficient contiguous territory to properly carry out any plan without great delays.

An additional cause of delay is that leases, not yet expired, often prevent, for the present, the taking of the property for improvement, even where the property is owned by the city.

The Department has under advisement a plan that it is hoped may enable the city to carry on the improvements more rapidly, and without the necessity of purchasing so much private property. If this could be done much greater progress could be made, and no very large sums need be expended in a year.

The policy of the Department, toward which it has made steady progress in the last year, is to do as much of its work as possible by contract and to conduct the large business intrusted to it on precisely the same principles that are necessary to the success of all business enterprises.

It is hoped that such efforts will be fortunate enough to be approved by the community.

THIRD.

In compliance with the third provision of said subdivision of Section 6, the following is submitted :

I.—List of Orders and Rules made by the Board.

The Board has not adopted any additional orders or rules during the year ending 30th April, 1877.

II.—Description of Contracts made by the Board.

With John A. Bouker, for building wooden platform in rear of bulkhead wall between piers, old numbers 45 and 46, North river ; estimated amount of contract \$11,086 $\frac{86}{100}$. Dated August 30th, 1876. Expiration, October 30th, 1876. Time extended to December 25th, 1876.

With John A. Bouker, for building pile foundation for platform in rear of bulkhead wall between piers, old numbers 46 and 47, North river ; estimated amount of contract \$7,140 $\frac{88}{100}$. Dated August 30th, 1876, Expiration, October 10th, 1876. Time extended to February 15th, 1877.

With T. & A. Walsh, for building pier, new number 39, North river, and removing from its site part of pier, old number 47, and sheds and buildings thereon ; estimated amount of contract \$29,900. Dated December 12th, 1876. Expiration June 12th, 1877.

With McIntire Brothers, for building wooden platform in rear of bulkhead wall between piers, old numbers 47 and 48, North river ; estimated amount of contract \$7,600. Dated January 29th, 1877. Expiration April 29th, 1877.

With Davis Tillson, for furnishing granite stones for Bulkhead or river wall ; estimated amount of contract \$9,424. Dated February 14th, 1877. Expiration August 1st, 1877.

With Johnson & Wilson, for furnishing 5,000 barrels fresh burnt "Portland" cement ; estimated amount of contract \$14,150. Dated March 24th, 1877. Expiration June 24th, 1877.

III.—Payments made by the Board.

The Commissioners of Docks have made requisitions upon the Finance Department for the payment of expenses incurred by the Department of Docks from May 1st, 1876, to April 30th, 1877, amounting to the sum of \$433,089.80.

The report of the Treasurer, herewith submitted, presents a full statement of the payments made by the Board and the purposes and amounts thereof.

IV.—Leases made by the Board.

Leases of the following named piers and bulkheads owned by the Corporation, were sold at public auction to the parties named below, for the term and at the annual rent set forth opposite each respectively, to wit :

ON NORTH RIVER—AT SALE HELD MARCH 12TH, 1877.

To Samuel D. Coykendall and Jacob H. Tremper, north half of pier, old number 34, for term of one year, from May 1st, 1877, at \$6,500 per annum.

ON EAST RIVER—AT SALE HELD MARCH 12TH, 1877.

- To Frank and Howard Phelps, Pier 40, and one-half of Bulkhead adjoining easterly side, for term of five years, from May 1st, 1877, at \$5,010 per annum.
- To James R. Klots, about 188 feet of Bulkhead on Tompkins street, adjacent to and north of the north side of Rivington street, for term of three years, from May 1st, 1877, at \$400 per annum.
- To John W. Manning, Bulkhead at East Thirty-second street, for term of three years, from May 1st, 1877, at \$45 per annum.
- To Garret L. Schuyler, Bulkhead at East Thirty-fifth street, for term of three years, from May 1st, 1877, at \$235 per annum.
- To Popham & Co., Bulkhead at East Thirty-sixth street, for term of three years, from May 1st, 1877, at \$130 per annum.

Leases of the following wharf property, owned by the Corporation, have been granted by resolution of the Board, to the parties named below, for the term, and at the annual rent set forth opposite each, respectively, to wit :

May 10th, 1876.—To Albany Day Line of Steamers, for land under water to extend Pier at Twenty-second street, North river, 125 feet westerly, for the term of their lease, ten years, from May 1st, 1876, at \$250 per annum.

May 10th, 1876.—To New York Central & Hudson River Railroad Company, for land under water to erect platform, extending 75 feet south of Bulkhead, between Piers 4 and 5, East river, and widen said Pier 5, 20 feet on easterly side; for the term of their lease, ten years, from May 1st, 1876 (as amended June 28th, 1876), \$750 per annum.

May 10th, 1876.—To New York Central & Hudson River Railroad Company, for land under water, to erect platforms, extending westerly to new Bulkhead line between Piers 25 and 26, and between Piers 26 and 27, North river, and 38 feet on southerly side of Pier 27, North river, during the pleasure of the Board, \$5,600 per annum.

May 16th, 1876.—To New York Central & Hudson River Railroad Company, for land under water, to extend platform between Piers 4 and 5, East river, a further distance southerly of 25 feet, for the term of ten years, from May 1st, 1876, \$80 per annum.

June 21st, 1876.—To New Jersey Southern Railroad Company, for land under water, to erect platform on southerly side of inner end of Pier 8, North river, during the pleasure of the Board, \$100 per annum.

June 21st, 1876.—To E. P. Griffin and others, to use piers at One hundred and fifty-second street, North river, as a steamboat landing for passengers, for the season, \$50.

June 21st, 1876.—To Sea Cliff Steamboat Company,

to make landings at outer end of Pier 55, East river, for the season \$25 per month.

June 28th, 1876.—To Booth and Edgar, the new Bulkhead (when completed), between King and Charlton streets, North river, upon terms and conditions to be agreed upon hereafter.

June 28th, 1876.—To J. L. and D. H. Coles, for land under water (for erection of platform), at inner end of westerly side of Pier 50, East river, and bulkhead adjoining; from August 1st, 1876, during the pleasure of the Board, \$100 per annum.

June 28th, 1876.—To James MacDonald, for inner end of southerly side of pier at One hundred and fifty-second street, North river, for erection of a derrick; until September 1st, 1876, \$50.

June 28th, 1876.—To Sea Cliff Steamboat Company, for outer end of pier at foot of Thirty-third street, East river, for a passenger steamboat landing for the season, \$30 per month.

August 16th, 1876.—To New York Central & Hudson River Railroad Company, for land under water, to be covered by pier, to be erected at foot of Fifty-ninth street, North river, for ten years, from completion of pier, \$1,000 per annum.

October 14th, 1876.—To Police Department, for a portion of westerly end of East Seventeenth street yard, during the pleasure of the Board.

October 11th, 1876.—To Jeremiah Skidmore and

Sons, for Bulkhead at Thirty-fifth street, East river, during the pleasure of the Board, from October 1st, 1876, \$100 per annum.

October 25th, 1876.—To James F. Minster, for Bulkhead at Thirty-second and Thirty-sixth streets, East river, during the pleasure of the Board, until May 1st, 1877:

Thirty-second street, at \$75 per annum.

Thirty-sixth street, at \$100 per annum.

October 25th, 1876.—To Thomas Patten for the land under water west of 54 feet of Bulkhead adjoining northerly side of pier 36, North river, for the purpose of erecting platform thereon; during the pleasure of the Board, \$250 per annum.

November 1st, 1876.—To Drew and Bucki for land under water west of bulkhead, south of and adjoining pier at Thirteenth street, North river, for the purpose of erecting platform thereon; during the pleasure of the Board, \$500 per annum.

December 6th, 1876.—To National Steamship Company, for temporary use of pier, new number 43, North river, (until pier new number 39, North river, shall be finished,) \$15,000 per annum.

December 13th, 1876.—To Long Island North Shore Freight and Transportation Company, for use of outer end of pier at Thirty-third street, East river, as steamboat landing, during the pleasure of the Board, \$30 per month.

March 21st, 1877.—To Phelps Brothers and Company, for pier 40, East river, and one half of Bulkhead adjoining the easterly side thereof, from March 20th, to May 1st 1877, at \$5,010 per annum.

March 21st, 1877.—To New York and Brooklyn Ferry Company, for land under water in front of Bulkhead adjoining westerly side of pier 56, East river, necessary to establish a ferry slip, from May 1st, 1877, to May 1st, 1879, at \$25 per annum.

April 27th, 1877.—To Schmitt and Koehne, for land under water for Bulkhead between Fifty-sixth and Fifty-seventh streets, East river, during the pleasure of the Board, at \$50 per annum.

Reductions in rent and allowances of sums due the Department, under leases for wharf property, have been made as follows :

May 10th, 1876.—F. Habkemeier granted an allowance of \$542.42 from rent due May 1st, 1876, for Pier at Little Twelfth street, North river, for loss sustained consequent upon the Department failing to furnish necessary depth of water agreed upon.

June 21st, 1876.—David Tracy granted an allowance of \$700 from rent due for Pier at foot of Bethune street consequent upon the mooring of a free floating bath thereat, from June 21st to October 21st, 1876.

July 28th, 1876.—Thomas I. Madge granted an allowance of \$300 per annum, from May 1st, 1876, from rent due for easterly half of Pier 18, East river, con-

sequent upon the city being unable to give possession of the outer end of said half.

August 16th, 1876.—David Tracy granted an allowance of \$300 from rent due for Pier at Thirty-seventh street, East river, consequent upon the mooring of a free floating bath thereat, until October 16th, 1876.

August 30th, 1876.—David Tracy granted an allowance of \$612.50 from rent due for Pier at Thirty-fifth street, North river, and easterly half of Pier 51, East river, consequent upon the mooring of a free floating bath at each of said piers, until October 18th, 1876.

September 13th, 1876.—Frederick Broege granted an allowance of \$50 from rent due for Pier at Fifty-first street, North river, consequent upon its free use being obstructed during the recent repairing of the street.

January 24th, 1877.—Palisades Ferry Company granted an allowance of \$864 from rent of \$2,125, due under the assignment made by Peck & Wandell on December 14th, 1874, of wharf premises foot of Spring street, North river, being expense incurred by Company in repairing damage to its boat, caused by the work of the Department proceeding in the immediate vicinity of said premises.

April 18th, 1877.—Treasurer authorized and directed to receive and accept the sum of \$500 in full settlement of all rent due from Levi Kerr, assignee, to 1st May, 1877, under lease for Pier at Ninety-sixth street, North river, made to Jonas Sonneborn, expiring May 1st, 1878.

Consent has been given to the assignment, transfer or surrender of the following leases of wharf property :

June 1st, 1876.—Consent given to Theodore F. Tone to assign lease of Bulkhead adjoining Pier at foot of One hundred and thirty-first street, North river, expiring 1st of June, 1878, to Nicholas Rogers.

June 21st, 1876.—Consent given to F. Habkemeier to assign lease, when executed, of Pier at foot of Little Twelfth street, North river, expiring 1st May, 1878, to George F. Drew and Louis Bucki.

February 28th, 1877.—Consent given to Frederick Habkemeier to surrender, from and after March 1st, 1877, lease of Pier at Sixteenth street, North river, purchased at public sale held April 22d, at \$825 per annum, and expiring May 1st, 1878.

April 18th, 1877.—Consent given to Marshall O. Roberts to assign lease of southerly half of Pier 29, North river, dated January 18th, 1870, and expiring February 1st, 1880, to the Providence and Stonington Steamship Company.

All of which is respectfully submitted.

SALEM H. WALES,
JACOB A. WESTERVELT,
H. F. DIMOCK,

Commissioners of Docks.

EUGENE T. LYNCH,
Secretary.

REPORT

OF THE

ENGINEER-IN-CHIEF.

DEPARTMENT OF DOCKS,

117 AND 119 DUANE STREET.

OFFICE OF THE ENGINEER-IN-CHIEF,

NEW YORK, MAY 1, 1877.

EUGENE T. LYNCH, Esq.,

Secretary of the Board of Docks :

SIR—I have the honor to submit for the consideration of the Board of Commissioners, governing this Department, the following report of the several works under my supervision, during the year ending April 30th, 1877:

NEW PIER No. 1, N. R.—During the year the end of the pier was finished, a wooden deck of 4 inch spruce plank laid on top of the concrete, and fender piles driven in front of each sub-pier to prevent vessels from striking against the sharp edges of the concrete blocks below water. About 2,850 cubic yards of rip-rap were thrown in under the arches, and at the ends of the sub-piers, to protect the mass concrete, upon which they rest, from the wash of the tides. This was found to be necessary from an examination which was made by the aid of a diver, of the foundations of all the sub-piers, showing their crib-work to be so worm-eaten that the sides of some were ready to fall off.

All the concrete blocks, 190 in number, containing 4,913 cubic yards of concrete, used in the Bulkhead Wall, and for the end of the pier, were made at this section of the work.

The original plan of this pier contemplated covering the deck with Trinidad Asphalt Pavement, similar to that laid on Fifth avenue, near the "Worth Monument," but the company which makes and lays such material being unable to lay their pavement this year, for the Department, on account of other engagements, it was decided to cover the surface of the pier with a plank flooring, which was finished on the last of April.

It is very desirable to carry out the original design for covering the deck of this pier with Asphalt, and it can be done with but little inter-

ruption to the use of the pier, whenever the Asphalt Company are ready to lay their pavement. The present wooden covering would not be lost, but the material could be used for repairs.

CANAL STREET SECTION.—South end Bulkhead Wall; The foundation piles having been driven for the wall on the “*Béton en masse in situ*” plan, the wall was built, as recommended by the Board of Engineers in such cases.

The mud having been removed from around the foundation piles, driven in 1875, cobbles were thrown down between them, up to 15 feet 2 inches below mean low water, at which point the piles were cut off. Concrete blocks, in two courses, as recommended by the Board of Engineers, were placed on the piles, and surmounted by the granite facing with its backing of concrete and rubble blocks. The length of wall now finished south of new Pier 34, is 90 feet measured on the coping.

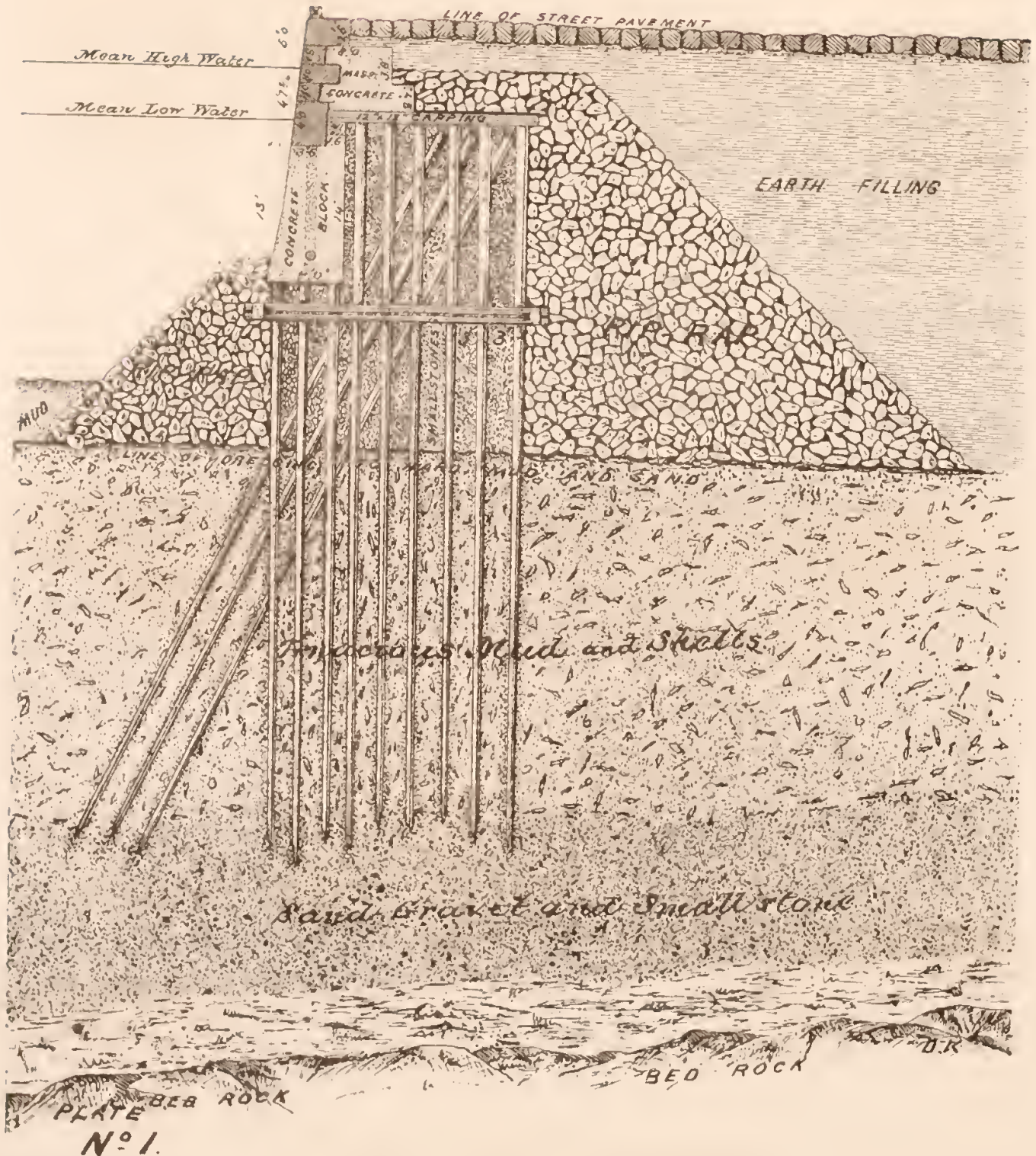
North end Bulkhead Wall; at this point the foundation piles having been driven for the wall on the “*Béton en masse in situ*” plan, the wall was built on the plan recommended by the Board of Engineers for such cases. Here the divers removed from around the foundation piles about 64 cubic yards of concrete deposited in 1875. The piles were then cut off 14.2 feet below mean low water, and concrete blocks placed on them, in two courses, in the same manner as at the South end. In order to connect the old work with the new, two steps were cut in the “mass concrete.” On the foundation thus prepared, the granite facing and backing were built up, and the wall at this section is now finished for a distance of 122 feet, north of Pier 34 (new number) measured on the coping. The wall, at both ends, is built in steps from the foundation up, so as to connect with the new work.

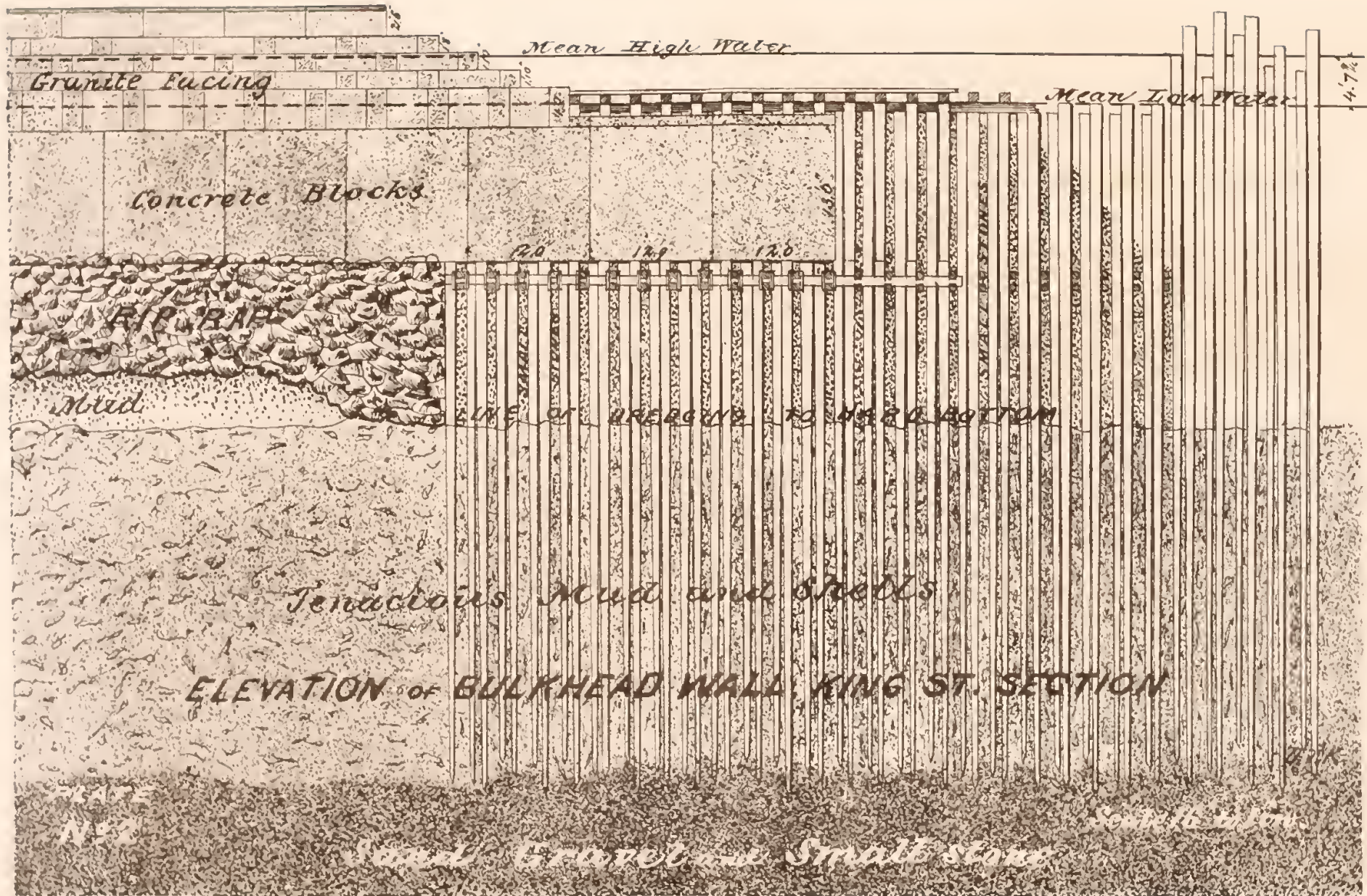
Replaced sewer box or trunk removed in order to build the wall, and built a roadway over it to connect Pier 42 (old number) with the street.

In accordance with recommendations of the Board of Engineers, a platform was built in rear of the whole length of wall at this section to relieve the thrust of the back filling. The work of filling-in was then

SECTION OF BULK-HEAD WALL

Scale 16 feet to 1 inch





begun at the wall, preserving the embankment face towards the shore or old Bulkhead line.

KING STREET SECTION.—Bulkhead wall between Piers 45 and 46 North river: This portion of the Bulkhead Wall having been built on the plan of depositing the fresh concrete in mass, was protected, as recommended by the Board of Engineers, in the same manner as at Canal street, by building a relieving platform in rear of the wall, depositing a bank of rip-rap in rear of the platform, and then filling-in from the wall towards the shore.

NEW KING STREET SECTION.—On the 21st of December, 1876, orders were received from the Board to build the Bulkhead Wall through Pier 46 (old number) at foot of King street, between the old King street section built upon the plan of "*Béton en masse in situ*" and the lower Clarkson street section where the piles had been driven for a foundation upon the "*Béton en masse in situ*" plan, and where the wall was being built with alternate header and stretcher blocks and wide platform, in the rear, as recommended by Messrs. Newton, Gilmore, and Worthen, for such cases. The orders directed that this section of the wall should be built upon the plan submitted to the Board by me on 5th April, 1876.

A temporary roadway to give access to the Pier No. 46 was built around the site of the wall, and the pier removed for 47 feet in front and 90 feet in rear of the line of the new Bulkhead Wall. The site of the wall was then dredged to hard and compact mud mixed with sand. The material brought up by the dredge was constantly examined, and when material deemed sufficiently hard and compact was reached, the excavation was stopped. The depth varied from 30 to 35 feet below mean low water.

The vertical piles were then driven, carefully spaced, and the transverse lines kept straight and even by sinking a round log to the bottom of the water, which rested against the row first driven, and against which each pile bore as it was driven.

As soon as the vertical piles were driven, the small cobble-stones mixed with coarse gravel, were put around and among the piles to the height of the under side of the binding frames, and rip-rap stone was placed outside the piles, in front and rear, according to the lines shown on the plan (see plate No. 1, section of Bulkhead Wall).

The binding frames were then slid down to their places. These binding frames were made of two pieces of spruce plank 5×10 inches, placed edgewise one over the other, and running from front to rear of the piles between the rows. An oak beam 8×8 inches was let through these planks in front of the front row and in rear of the rear row of piles, and an oak wedge block was fitted and placed by the divers between the oak beam and each pile nearest it (see plates Nos. 1 and 2). The duty of these frames is to hold the front rows of piles firmly in case there should be any tendency in them to tilt or bend outwards.

More cobble-stone was then put in to the height of the bottom of the base blocks of the wall, weighting the binding frames and preventing any tendency to floating.

The bracing piles were then driven on a slope of 6 inches horizontal to 12 inches vertical, between the rows of vertical piles and spaced 3 feet from centre to centre longitudinally and transversely.

All the piles were staylathed and adjusted in position as soon as they were driven.

The bracing piles were then cut off at right angles to their axes about one foot below mean low water, and capped with 12 inch square timber, running longitudinally. The sides of the caps were kept horizontal and vertical, and a sloping recess or notch was made to receive the head of each bracing pile, and give it a good bearing.

The six rear rows of vertical piles were cut off at two inches above mean low water, and notched front and rear to give an eight inch wide bearing across their tops for the transverse caps.

The three front rows of vertical piles were then cut off by a circular saw, suspended in the ways of a pile-driver, at 15.3 feet below mean low water mark, to receive the concrete base blocks of the wall. It being

impracticable, if not impossible, to cut off piles at this distance below the surface of the water to exactly the same height, and it being evident that the bottom of the concrete base blocks, being a rigid plane, they would rest only upon the three highest piles of those under them until some crushing or bending should take place, a mattress of burlap, containing freshly mixed soft mortar, in a layer about 2 inches thick, was placed on a network of marline stuff, supported by a plank frame about its edges, and lowered upon the tops of these piles immediately before setting the base blocks upon them. The diver then cut the netting between the edge of the mattress and the plank frame, and the frame floated to the surface of the water, and was again netted for future use.

The base block was then immediately placed in position upon the mattress of mortar resting on the piles. The action of this mattress is that, the mortar, being enclosed in bagging, preventing separation of sand and cement, or water killing of the cement, when the weight of the base block comes upon it the excess of mortar is pressed out from between the head of the pile and the bottom of the base block, until each pile has a well and evenly distributed portion of the load to carry, and when the mortar hardens, that part between the piles acts as a continuous brace or tie for all the piles.

The concrete base blocks for this section are of different size and shape from those used in any work of this kind that has come to my knowledge; (see plate No. 3.) They are seven feet wide at the bottom, and five feet wide at the top; on the front the vertical height is 13 feet, and on the rear 14 feet. The top has a step on the rear, (included in the 14 ft. height,) of 1 ft. height, and $1\frac{1}{2}$ feet wide, extending the entire length of the block, for the purpose of giving the mass concrete backing of the granite superstructure a good hold upon the block. For handling, grooves for chains are moulded in the end, and a longitudinal hole, 2 ft. in the clear above the bottom connects them, with the corners rounded, to enable the chain to render easily. The face is curved inwards, to save material while giving a broad base; their length is

12 feet. The advantages of this block are, that 12 feet of foundation of the wall is laid in one block, in about one quarter the time that 10 feet could be laid on the other plan, and that the chain, being carried through the block in the hole 2 ft. from its base, there is no groove in the bottom, in which, should the head of the pile come, it would do no duty.

After the blocks were set, the vertical chain grooves in each block, coming opposite to each other, were filled in with concrete in bags, and well pressed, or rammed into place. This closed the joints between the blocks, and also acts as a tongue set into the grooves in the blocks, to prevent one block moving alone.

As soon as the base blocks were set, and the grooves filled in, the cross-caps resting on the tops of the vertical piles, and on the the longitudinal caps of the bracing piles, reaching about half way across the base blocks, were placed and fastened. Oak treenails were used in all fastenings. The small cobbles were then filled in around and among the piles to the top of the caps, and the rip-rap placed in the rear of them.

This was finished on February 14th, 1877, and the weather being too cold to proceed with the masonry superstructure, the work was suspended until April 6th, giving excellent opportunity to watch for settlement of the stone filling between the piles; none, however, occurred, showing that the hard bottom reached in the dredging was quite sufficient for the purpose.

The granite masonry was commenced on April 20th, 1877. This differs from that previously used in making the two lowest courses in one of equal rise to the two; the advantage of using this, is that it can be set at every low tide, whereas, with the bottom course of 2 feet 2 inches, and the course above it of 1 foot 10 inches there was frequent delay and loss of time. The cutting on face of all new granite was omitted, and the face is made a split surface, with no projection beyond the building line greater than one inch and a half.

The granite was backed up with concrete, as shown in the plan, (see plate) and 12 feet of the rear of the transverse caps were covered with a 4 inch plank platform, treenailed to the caps. The outer ends of the caps were firmly bedded into the concrete backing; selected earth, stone and gravel, offered free to the Department, was then filled in, beginning at the wall, and filling towards the shore, and afterwards the filling was continued with less carefully selected material.

The cost of this wall, as will be seen in the Appendix, Schedule No. 3 (C), is \$263.04 per foot. It was necessary to use up in this section certain of the granite on hand, but if the new granite only had been used, the cost would have been \$7.76 per lineal foot less, or \$255.28.

Taking this sum of \$255.28 as the cost of this section, the cost of the wall on the North river front, between Morton and Warren streets, for which this plan was designed, can be estimated as follows:

The indications from the borings made on the line of the wall from Morton to Warren streets, are that this particular locality, on account of depth of soft material requiring longer piles and more dredging, is more expensive than any other section will be on the line between Morton and Warren streets.

On account of the depth of soft materials here, the cost of the piles, see Appendix, Schedule No. 3 (A), averaged \$12.85 each, which equals \$51.40 per lineal foot.

At the Canal street section, piles were required for similar purposes (viz., Board of Engineers' platform), which the Department bought for \$4 per pile, and, as the number of piles is four for each lineal foot, if this section had been built at Canal street, the cost per lineal foot in piles only would have been \$35.45 less than here.

The profile of the borings also indicates that a sufficiently hard bottom will be reached by a less depth of dredging than was required at this section, and, as a matter of judgment, I think five feet less a moderate estimate of this advantage; and, besides reducing the amount of dredging the quantity of rip-rap and small stone would also be reduced.

The diminished quantity of dredging would equal \$3.25 per lineal foot, and the diminished stone 13 cubic yards at 80 cents average would amount to \$10.40 per lineal foot.

The dredging charged in this account, see Appendix, Schedule No. 3 (B), includes the removal of the old crib under old Pier 46. The whole cost of removing this crib should not be charged to this short section of 114½ feet, but rather to one-half the distance from this crib to the cribs on the north and south side of it, which is 300 feet. The cost of this crib's removal was \$829, included in item of dredging in Appendix, Schedule No. 3 (B), or \$7.25 per lineal foot, while if it is divided by 300 feet, it would be \$2.75 per lineal foot. The difference between \$7.25 and \$2.75, equal to \$4.50 per lineal foot, should therefore be deducted from the above cost of the wall.

The sum of these items, viz. :

For reduced size and cost of piles.....	\$35 40
“ diminished dredging.....	3 25
“ “ stone rip-rap and cobbles.....	10 45
“ distribution of cost of removing old crib.....	4 50
Total... ..	<u>\$53 55</u>

—and deducting this sum from \$255.28, gives \$201.73 for estimated cost of cheapest section of wall built on this plan in the district for which it was designed.

The profile of the borings shows that this section has been built at about the point of greatest depth of soft mud, between Morton and Warren streets, and also that the length where the cost will approach the cost of this section is about 1,750 feet, and the length where the condition will be about the same as at Canal street, and the cost at the lower rate per foot estimated above for such a locality about 2,850 feet.

Therefore 1,750 feet at \$255 28.....	\$446,740 00
2,850 “ 201 73.....	574,930 50
Total distance 4,600 feet cost.....	<u>\$1,021,670 50</u>

—which is equal to an average cost of \$222.10 per lineal foot.

This section of wall being mainly in rear of a pier where there is no coping, no charge for coping is included in the above.

The exact proportion of wall which will have a coping and which will not have it, cannot be determined at present, because the width of piers and the width of slips between the piers is not finally fixed until immediately before building the piers. It will however be about 30 per cent. of the length without coping and about 70 per cent. with coping. The Department has now on hand about 518 lineal feet of coping, which is cut and ready for use, and which has cost \$21.57 per lineal foot. The cost of setting this coping is about \$3.47 per lineal foot, including transportation from East Seventeenth street yard.

Until this coping is used up, the average cost of the coping per lineal foot of the wall will be 70 per cent. of \$25.04, equal \$17.53, which is to be added to the above estimate of \$222.10.

The granite, other than coping, which was bought by contract in the rough and cut by days' work, cost \$1.30 per cubic foot, measured in the rough, and about 27 per cent. additional, or \$1.65 per cubic foot neat measurement. By lessening the cutting and buying the granite cut ready for the work by contract, it was obtained for 62 cents per cubic foot neat, or over 62 per cent. less. By buying the coping cut ready for setting by contract, it could, I think, be obtained for about 40 per cent. of the cost of that on hand, or \$8.63 per lineal foot, the cost of setting it would be about the same, and the total cost of coping when set would be \$12.10. As before stated, only 70 per cent. of the wall will have a coping, therefore, 70 per cent. of \$12.10, or \$8.47 is the amount to be added to the above \$222.10 for the total average cost of the wall. This gives \$230.57; to this add \$1 per foot for cost of pointing the joints, and the estimated average cost of the wall, based on the cost of this section, is \$231.57 per lineal foot.

In addition to the above are to be considered certain reductions in cost of materials and labor in other similar work since this new King street section was done. In materials by contracts made since this section was built, the price of broken stone, sand, cement, rip-rap stone and cobbles has been

reduced to an amount equal to \$11.47 per lineal foot, while on the Houston street section, built on this plan, the cost of labor (due to reduction of work done and experience of the workmen) has been reduced \$14.78 per lineal foot, and on Leroy street section the diver's bill (included in labor) has been reduced by \$1.87 per lineal foot.

The sum of these reductions is \$28.12, which, taken from the above \$231.57 leaves \$203.45. I have no doubt that this wall can be built for about this sum on the line between Morton and Warren streets.

As will be seen in the itemized account of labor and materials charged to this section of wall given in the Appendix, Schedule No. 3 (A), no charge is made of general expenses and for depreciation of machinery now owned by the Department. Under the head of general expenses would come the commissioners', secretaries', bookkeepers', clerks' and engineers' salaries and office expenses; these cannot be definitely apportioned to any one section of the wall, and perhaps the nearest approximation to a correct apportionment is to charge the same proportion of the whole of general expenses for a year as the cost of any particular section of wall bears to the total expenditures for every kind of work for the same time.

The depreciation of machinery is not charged, because it is the same for any wall where the machinery is used, and the cost of extending the sewers, making the temporary approaches to piers and filling are not charged, because they pertain to any plan of wall or retaining structure that may be used, and one of the objects in making this statement and estimate of cost, is to give a basis for comparison with any other plan of wall or kind of retaining structure that may be proposed.

LOWER CLARKSON STREET SECTION.—The foundation piles having been driven and filled in with stone, and caisson built for the wall upon the "*Béton en masse in situ*" plan, the wall was built upon the plan recommended by the Board of Engineers for such cases.

The caisson, which had been put down in 1875 to receive the concrete "*en masse*," was taken up, and the mud which had accumulated around

the piles pumped out with the centrifugal pump on board the ten ton derrick. The piles were then cut off 14.7 feet below mean low water, and two courses of concrete foundation blocks, as recommended by the Board of Engineers, placed upon them. A relieving platform, in rear of the wall was built by contract. The work of setting the granite and backing it up with concrete is now in progress.

HOUSTON STREET SECTION.—Bulkhead Wall: This portion of the bulkhead wall is being built on the new plan, the same as the King street wall in rear of old Pier 46, with the following exceptions: It having been found in the new King street section that the soft mud in the vicinity had a tendency to flow in among the piles while they were being driven, the small cobbles were put in immediately on completion of the dredging to the height of 20 feet below mean low water, and the piles driven through the cobbles. This plan proved preferable to the other, and the cost was not appreciably increased.

To facilitate the work, the bracing piles were put only in every other space between two rows of the vertical piles, and the binding frames only in those spaces between vertical piles in which there were no bracing piles, and the rip-rap in the rear made 6 feet wider from top to bottom.

The piles have all been driven, and the work of cutting off the first three rows to receive the concrete blocks that form the facing of the foundation, is now in progress.

NEW PIER 39, NORTH RIVER.—The contractor commenced work on this pier December 11th, 1876, by tearing away old Pier 47, and after the Department had dredged out on the site of the old pier to a depth of 25 feet below mean low water, the work of building the new pier was commenced by driving the piles furnished for that purpose by this Department. At the present time nearly all of the piles and columns have been driven, nearly all the caps and braces put on, and two-thirds of the deck laid.

UPPER CLARKSON STREET SECTION.—The foundation piles having been driven and filled in with stone, and caisson built for the wall upon the

“*Béton en masse in situ*” plan, the wall was built on the plan recommended by the Board of Engineers for such cases.

On this section of the bulkhead wall, the square piles and shutters that had been put down in 1875 to form a caisson for receiving the concrete deposited “*en masse*,” were pulled up, and the piles were cut off $15\frac{1}{2}$ feet below mean low water. Cobbles and coarse gravel were then put down around the heads of the piles, and rip-rap in front and rear of the foundation, which had been dredged out to receive it. Two courses of concrete blocks were then placed on the piles, as recommended by the Board of Engineers, and a relieving platform is now being built by contract, similar to those already constructed on the lower sections.

LERoy STREET SECTION.—This section, extending from northerly end of upper Clarkson street section to south side Pier 42 (new number), is to be built upon the new plan, the same as new King street section, and Houston street section.

Dredged out on the site of the bulkhead wall for a distance of 183 feet south from new Pier 42.

Deposited cobbles, with rip-rap in front and rear, over the bed thus dredged out, bringing them up within 20 feet of mean low water. The piles for the foundation are now being driven.

OLD PIER 49, NORTH RIVER.—This pier was extended 60 feet by 149 feet.

NEW PIER 42, NORTH RIVER.—The contractor finished the 60 feet of the inshore end, connecting it with the bulkhead wall October 31st 1876. The Department, after the contractor had finished, put in some bracing piles at the outer end of the pier, some chocks under the tie-rods, tore away the temporary roadway connecting the pier with the street, and widened the approaches to the pier.

MORTON STREET SECTION.—Bulkhead wall: Secured the platforms on the heads of the piles, and upon these set the concrete blocks in two

courses, built on the same plan as the Christopher street section. Rip-rap was then put down in front and rear of the wall, and the granite facing set, being backed up with concrete and rubble blocks. This makes the length 151.3 feet of finished wall measured on the foundation, the south end being finished off in steps up to the "E" course, in order to connect with the Leroy street wall, now being built.

FLOATING PROPERTY.—On the large derrick "City of New York," there has been made the usual annual general overhauling of machinery, hull and running gear. All was found in very good order, and a comparatively small amount of wear, considering the amount of work done, during the past year of service. The work of general and thorough repairs, cleaning and repainting, was performed by her regular crew, excepting such mechanical work for which this Department has neither the facilities nor material.

The ten ton derrick has been completely overhauled and repaired to good order. Most of the repairs were made by the Department's men and facilities.

The three ton derrick "Joe" was altered to be adapted to the present necessities of the Department work, by shortening the hull 20 feet, making a stronger boom, and attaching details to meet the requirements of heavier work in smaller spaces.

The boring machine "Woodcock" has not been in service during the past year, and remains in the same condition as she was last year.

The tug "Manhattan" has been docked and put in a complete state of repairs throughout, and is now in perfect order. She has towed 686 loaded scows to the dumping ground, besides performing other general towing requirements for this Department. Amount of coal consumed is 835 net tons.

The tug "Louis" was lost on the afternoon of Monday, October 16th, 1876, off Coney Island, while on her way with two loaded mud scows to the assigned dumping-ground, three miles outside of Sandy Hook. She had towed 92 loaded scows to the dumping-ground, also rendering general service in towing for this Department. Amount of coal consumed is 218 net tons.

The tug "Alert" is in a fair condition of repair, considering her age and general infirmities. By patching she may be made to perform service for some time longer, but at a constant increase of cost for repairs, and, as will be seen by her repair cost of the past two years, it will be advisable to replace her with a more modern and reliable vessel in case constant service is to be expected. She has towed 186 loaded scows to the dumping-ground, also rendered general service in towing for this Department. Amount of coal consumed is 418 net tons.

To the four dredges, the usual annual repairs have been made, and these machines are now in good order. During the past year only three of the dredges were in service at a time, the fourth having been kept in repair and readiness in order to take the place of either of the others should they become disabled.

The total amount of dredging done for the year is 199,938 cubic yards. The total amount of coal consumed is 412 net tons.

All of the mud or hopper scows, eighteen (18) in number, are in good repair, except seven (7) of them, which will soon require to be docked and caulked.

All of the deck scows, nine (9) in number, are in a fair state of repair considering the service they have done; excepting the scow "Two Sisters," which is now laid up at Weehawken, and her condition is such as not to warrant further expenditure.

The pile drivers, nine (9) in number, are all in a good state of repair. They have been thoroughly overhauled and repainted, and small repairs made where found necessary. Alterations were made in pile drivers Nos. 1, 7, 8 and 9, by having their ways placed on a platform so as to be shifted from one side to the other. Pile driver No. 5 has been converted to a pile cutter, and the ways of pile driver No. 3 altered in order to drive extreme batter piles. Pile driver No. 1 was upset and sunk in a gale, at the Battery, the 29th of December, 1876, and she was raised and repaired by the Department's men and facilities.

The machinery of the Rapid Transit Hoister remains in the same condition as last year, at East Seventeenth street yard, having been properly laid up there.

SURVEYING PARTY—Have been engaged in taking frequent soundings before and after dredging, and from time to time upon the rip-rap and cobble stone as placed in the foundation; in giving lines and levels for the work under construction, and in making frequent examinations of the wall in order to detect any changes from settlement or outward movement, a base line has been established upon the westerly side of West street, by a system of stone monuments, which extends now from Barrow to Spring streets. An occasional verification of the base line is found necessary, inasmuch as all of the monuments have moved more or less from the great amount of travel over them.

In view of future work, south of Canal street, the base line has been extended to Warren street (but the monuments are not all placed as yet), and surveys made of existing piers and bulkheads from Warren to Jay street. The establishment of these base lines, and their verification, have been rendered very tedious, from the fact that it was all performed by night and Sunday work, it being impossible, in consequence of the travel on West street, to accomplish anything satisfactorily during the usual working days. Various tests of bench marks have also been made from Battery to Thirty-fourth street, N. R.

The total number of soundings taken during the year has been 14,000, of which 8,000 were in connection with construction and 6,000 in various slips on the North and East rivers. Twelve surveys have been made of existing piers, bulkheads, shore line and surroundings at various points upon the North, East and Harlem rivers, covering in all about two miles of water front. Maps of each have been prepared, and all notes of above work have been plotted and recorded.

Very respectfully,

Your obedient servant,

G. S. GREENE, JR.,

Engineer-in-Chief.

APPENDIX—SCHEDULE No. 1.

GENERAL REPAIRS—FOR YEAR ENDING APRIL 30, 1877.

May 8th.—Dumping board at West Twelfth street; repaired deck 35 square feet.

May 19th.—Pier 52 North river; patched holes in deck.

May 26th.—Pier 40 East river; patched deck, 66 feet B. M., 4 inch spruce plank.

June 3d.—Pier at Thirty-seventh street, North river; patched roadway 285 square feet.

June 6th to 8th.—Public bath at Fifth street, East river; drove 20 fender piles and staylathed them.

June 10th.—Pier 40 East river; patched holes in deck.

June 9th to 27th.—Public bath at Bethune street; drove 16 fender piles and staylathed them.

July 20th and 21st.—New pier 42 North river; replaced broken chocks.

July 15th to 22d.—New pier 43 North river; raised roadway and relaid platform.

July 17th to 22d.—Platform and roadway to Hoboken ferry; raised roadway and relaid platform.

July 29th.—Public bath at Bethune street; repaired float fender stage.

August 2d.—Pier 40 East river; patched deck.

August 14th.—Pier 40 East river; patched deck.

August 16th.—Pier 42½ North river; sheathed deck 760 square feet.

August 25th to 28th.—Public bath at Thirty-seventh street, East river; built 3 float fender stages and cut gangway in north side of pier.

August 21st to 28th.—Pier 45 (new number) North river; raised roadway and relaid platform.

September 4th to 7th.—Pier 62 East river; patched and sheathed deck and put on yellow pine fenders.

September 9th to 12th.—Public bath at pier 51 East river; drove 18 fender piles and staylathed them.

September 8th to 15th.—Pier at Twenty-eighth street, North river; patched and sheathed deck 3,300 square feet.

September 25th.—Pier 40 East river; patched deck, 163 feet B. M.; yellow pine plank.

September 25th to 28th.—Bulkhead at One hundred and twelfth street, Harlem river; raised bulkhead 3 x 50 feet in length, put in 17 braces, 12 yellow pine fenders and 1 backing log.

September 27th and 28th.—Public bath at pier 51 East river; built and placed in position 2 float fender stages.

September 29th to October 13th.—Pier at Thirtieth street, North river; drove 26 piles, staylathed them, reset caps and rangers, put on fenders, chocks and cleats and laid 1,005 square feet of deck.

October 14th.—Public bath at Pier 51, East river; pulled up 18 piles and raised gangway.

October 16th and 17th.—Public bath at Fifth street, East river; pulled up 20 piles and raised gangway.

October 17th.—Pier 62, East river; patched deck 8 feet by 10 inches with yellow pine plank.

October 18th.—Pier at Thirty-seventh street, East river; built up gangway to level of deck.

October 18th and 19th.—Public bath at Bethune street; pulled up 15 piles and built up gangway.

October 20th.—Pier 40 East river; patched deck 86 square feet.

October 9th to 23d.—Pier at Thirty-eighth street, North river; patched deck and laid 30,782 feet of B. M. 4 inch spruce sheathing.

October 20th to 30th.—Bulkhead at Bank street; rebuilt bulkhead, putting in new braces, ties, fenders, and mooring post.

October 30th to November 1st.—Bulkhead at Thirty-second street, East river; built and fastened on 2—4½ feet cleats.

October 31st to November 1st.—Bulkhead at Thirty-sixth street, East river; built and fastened on 2—4½ feet cleats.

November 11th to 13th.—Bulkhead at Seventeenth street, East river; refastened and bolted chocks and fender piles.

November 14th to 16th.—Pier No. 6 East River; broke up boulders, dredged from slip, and repaired crib.

November 16th to 17th.—Pier No. 7 East river; same as Pier No. 6.

November 22d.—Bulkhead at West Eleventh street; put in and braced 2 mooring posts.

December 1st.—Pier No. 40 East river; patched deck.

November 23d and December 5th.—Pier No. 44 (new number), North river; filled in roadway and relaid platform.

December 15th to 20th.—Pier No. 61 East river; patched holes and sheathed deck 1,050 square feet.

December 20th to 21st.—Bulkhead Twenty-third street, East river; 58 lineal feet backing logs, and put up rail 4 inch by 6 inch spruce.

December 4th to 23d.—Bulkhead between Piers No. 60 and No. 61 East river; rebuilt bulkhead and set 3 mooring posts.

December 27th to 30th.—Pier at Twenty-third street, East river; drove, chained, and fastened 6 fender piles, put on 7 fenders, and braced mooring post.

January 8th to 10th.—Bellevue dock, Twenty-sixth street, East river; sheathed deck 4 inch spruce 1,330 square feet

January 29th to 30th.—Pier No. 46 (new number) North river; replaced 2 broken chocks and 1 oak fender.

March 6th to 10th.—Pier No. 34 North river: drove 21 piles, put on caps, rangers, chocks, backing logs, mooring posts, and laid deck 216 square feet.

March 31st to April 7th.—Pier at Sixteenth street, North river; put on 9 fenders and set 2 mooring posts, sheathed deck with 4 inch spruce plank, 1,444 square feet.

March 12th to April 7th.—Bulkhead at Twenty-ninth street, East river; built and fastened on 2—4½ feet mooring cleats.

March 12th to April 7th.—Bulkhead at Thirtieth street, East river; built and fastened on 2—4½ feet mooring cleats.

March 12th to April 7th.—Bulkhead at Thirty-first street, East river; built and fastened on 1—4½ feet mooring cleat.

April 9th.—Bellevue dock, Twenty-sixth street: patched deck 56 square feet.

April 7th to 27th.—Bulkhead between Piers No. 40 and No. 41 East river; rebuilt bulkhead and put on 6 new fenders.

APPENDIX—SCHEDULE No. 2.

Showing Details of Work.

NEW PIER No. 1 NORTH RIVER.—May 4th to June 28th, 1876.—Divers were engaged taking up rip-rap that had been used to sink cribs 17 and 18 and in sawing off 80 feet of cribwork that came in the way of the base course of the abutment pier.

July 7th to August 3d —Divers removing mud and soft material from between cribs 17 and 18 in order to reach hard bottom for the concrete foundation to rest upon, the cribs being too close together, and the water too deep to allow the use of a dredging machine with safety to the concrete in position.

August 5th to September 10th.—Engaged in putting down concrete in bags on the foundation.

September 12th to November 6th.—Setting concrete blocks, 57 in number, for the abutment.

November 6th, 1876, to January 20th, 1877.—Setting granite facing and concreting the spandrels of the last arch. This work was very much delayed on account of the tides being unusually high and also on account of the cold weather and storms.

January 20th to May 1st.—Finished sheathing the last arch with timber to protect it from the ice. Laid wooden deck, drove 36 spring fender piles, and choaked them on each side, and built wooden buffers at the end corners of the pier.

CANAL STREET SECTION: South end Bulkhead Wall.—July 21st to August 4th, 1876.—Trenches having been cut east and west of foundation south of new pier 34, the tugs *Louis* and *Manhattan* washed the mud from around the foundation piles, by the action of their propellers.

August 5th to 13th.—Deposited around and among piles 1,136 cubic yards of cobbles and coarse gravel.

August 14th to 29th.—Cut off 91 piles at south end 15.2 feet below mean low water.

September 14th to October 5th.—Set 20 béton blocks, length on lower course, 90.24 feet.

September 2d to December 16th.—Set 114 pieces of granite, backed with concrete and rubble masonry, making a length on "E" course of 91 feet.

April 9th to 11th.—Set 11 pieces of coping, making a length of 90 feet. 723 feet of vertical and horizontal joints of the granite set in 1875 were pointed. The sewer at Spring street was carried out through the new wall by means of a wooden box.

North end Bulkhead Wall.—June 19th to July 29th.—The divers removed 64 cubic yards of concrete, deposited in 1875, from around the foundation piles between new Pier 34 and Pier 43 (old number).

August 7th to September 2d.—Cut off 97 piles 14.21 feet below mean low water mark.

August 11th to April 13th.—Set 15 pieces of coping, making a length of 122 feet.

September 2d to 30th.—Divers cut 2 steps in the mass concrete to secure a bearing for the béton blocks. Set 6 béton blocks, making a length on lower course of 15 feet. Put down in rear of wall 40 cubic yards of cobbles.

October 14th to November 16th.—Set 44 pieces of granite, backed by concrete and rubble masonry, making a length on "E" course of 39.9 feet.

May 1st to March 31st.—Built a platform $363 \times 38\frac{1}{2}$ feet in rear of the wall. Drove 1,610 piles, cut off at low water mark, capped and covered with 14,610 square feet of 3-inch spruce plank.

July 5th.—Commenced discharging rip-rap and cobbles, on and in rear of platform, and to date 3,875 cubic yards have been deposited.

July 19th.—Commenced filling in rear of wall, and to date 27,760 loads of earth and ashes have been deposited, of which 7,338 loads were received from the Street Cleaning Bureau, Department of Police, at night.

OLD PIER 42, NORTH RIVER.—January 18th to 26th.—Replaced sewer

box or trunk, removed in order to build the wall, and built a roadway over it to connect the pier with the street.

February 21st to March 10th.—Removed “L” on north side of pier.

NEW PIER 34, NORTH RIVER.—March 28th to 30th.—Drove and fastened 2 mooring piles on each side of pier.

OLD BULKHEAD WALL AT KING STREET.—May 18th to 30th.—Put down in rear of wall 693 bags of concrete to make bed to rest caps of relieving platform upon.

June 1st to 17th.—Pointed face of wall.

June 23d to August 5th.—Built a platform on piles $27\frac{1}{2} \times 47\frac{1}{4}$ feet rear of wall at north end.

June 26th to August 10th.—Built a temporary roadway 27 feet wide, to connect Old Pier 46 with the street.

August 18th to December 23d.—Contractor Bouker built a platform on piles, $111\frac{1}{2} \times 47\frac{1}{4}$ feet, and put on and in rear of platform 3,757 cubic yards of cobbles and rip-rap, and 184 barrels of set Portland cement, received from importers, free of charge.

August 19th to 24th.—Department built a triangular platform, $40 \times 45 \times 60$ feet, in front of wall, for the accommodation of Messrs. Booth and Edgar's sugar house.

August 25th.—Set 7 pieces coping, south end of wall.

December 26th.—Commenced filling in rear of wall, and to date have received 13,306 loads of earth and ashes..

NEW BULKHEAD WALL AT KING STREET.—August 10th to September 1st.—Tore down shed and cut away about 140 feet of the inner end of Old Pier 46.

August 24th.—Commenced dredging for a length of $114\frac{1}{2}$ feet; finished September 28th.

September 15th to November 3d.—Drove for the foundation, 441 piles.

September 26th to April 27th.—Put down, around, and in front and in rear of piles, 2,889 cubic yards of cobbles and 1,023 cubic yards of rip-rap.

October 9th to November 16th.—Put down and fastened on the piles 5 binding frames.

November 4th to 9th.—Cut off first three rows of piles (119), 15.31 feet below low water mark.

November 13th to January 30th.—Put down and treenailed 37 transverse, and 333 feet of longitudinal caps.

November 24th to April 18th.—Set 10 beton blocks, 13 feet high, making a length of $114\frac{1}{2}$ feet.

January 26th.—Commenced building sewer connection $2.6 \times 3.4 \times 165$ feet, and to date a length of 90 feet has been finished.

April 20th.—Commenced setting granite, and to date 40 pieces, carrying base course 43 feet, have been set and backed by concrete.

BULKHEAD WALL AT LOWER CLARKSON STREET.—June 20th to July 24th.—Pumped mud from around piles in caisson, and took caisson up.

August 2d to 31st.—Cut off 404 piles 14.71 feet below low water mark.

August 15th to April 18th.—Set 20 first course and 14 second course béton blocks, making a length of $154\frac{1}{4}$ feet.

September 6th to February 15th.—Contractor Bouker built pile foundation for a platform rear of the wall. Drove and cut off 816 piles and put on 3 longitudinal caps.

January 16th to April 30th.—Contractor built the platform $46' \times 152'$,

NEW BULKHEAD WALL AT HOUSTON STREET.—Commenced dredging February 5th, for a length of 110.23 feet; finished February 21st.

Commenced February 22d, putting down cobbles and rip-rap, and to date 1,125 cubic yards of cobbles and 796 cubic yards of rip-rap have been deposited.

March 13th.—Commenced driving piles for the foundation, and to date 355 have been driven.

April 5th.—Commenced putting binding frames on the piles, and to date four have been put down and fastened.

April 24th.—Commenced cutting off first three rows of piles (108). 15.31 feet below low water mark, and to date have cut off 58.

April 27th.—Commenced capping, and 42 feet of longitudinal caps have been put on and treenailed.

NEW PIER No. 39, NORTH RIVER.—December 11th to February 8th.—Contractors tore away Old Pier 47 for a distance of 525 feet.

January 30th to February 26th.—Department dredged on site of Old Pier 47, to a depth of 25 feet at mean low water.

February 15th.—Contractors commenced building pier 75×580 feet, and to date, 688 piles and 16 columns have been driven, nearly all the caps, rangers and braces put on, and two-thirds of the deck laid.

BULKHEAD WALL AT UPPER CLARKSON STREET.—July 25th and 26th.—Pulled up square piles and shutters that had been put down for front of caisson.

September 1st to 4th.—Cut off 52 piles 15.21 feet below low water mark.

August 18th to September 7th.—Dredged east and west of the bulkhead line.

September 8th to November 9th.—Put down around piles 1,260 cubic yards of cobbles, and in front and rear of foundation 1,178 cubic yards of rip rap.

November 16th to April 9th.—Set 13 first course, and 9 second course béton blocks, making a length of 102 feet.

February 22d.—Contractor McIntire commenced to build a platform $45\frac{1}{2} \times 100$ feet in rear of wall, and to date, 391 piles have been driven and nearly all cut off.

NEW BULKHEAD WALL AT LEROY STREET.—Commenced dredging February 27th for the pile foundation for a length of 183 feet; finished April 5th.

Commenced April 4th putting down cobbles and rip-rap on bed, and in front and rear of foundation, and to date 1,568 cubic yards of cobbles and 908 cubic yards of rip-rap have been deposited.

April 24th.—Commenced driving piles for the foundation, and to date 99 vertical piles have been driven.

OLD PIER 49, NORTH RIVER.—December 18th to March 14th.—Extended the pier 60×145 feet.

NEW PIER 42, NORTH RIVER.—August 18th to September 16th.—Contractor McIntire built 60 feet of the inshore end of pier, connecting it with the wall.

Pier completed by contractor, October 31st.

June 30th to February 12th.—Department trimmed deck, put chocks under horizontal tie-rods, put in 2 oak fender-posts to protect corners of shed, and drove 10 bracing piles (spliced to make them 90 feet long), at the outer end of pier.

September 11th to 15th.—Tore away the temporary roadway 25×195 feet, connecting the pier with the street.

October 20th to 23d.—Widened the approach to pier 12×50 feet.

BULKHEAD WALL AT MORTON STREET.—June 6th.—Finished securing the platforms (6) on heads of piles.

June 9th to July 8th.—Set 72 béton blocks, length on lower course 151.33 feet.

June 26th to October 21st.—Put down in front and in rear of foundation 1,641 cubic yards of rip-rap.

July 11th to August 23d.—Set 161 pieces of granite backed by concrete and 26 rubble blocks, making a length on "E" course of 145.35 feet.

August 10th to September 15th.—Built and sunk rear of wall, a crib 35×40 feet.

October 25th to 28th.—Set 20 pieces of coping on bulkhead wall, between new piers 42 and 43 making a length of 162.82 feet.

November 22d to 25th.—Drilled 20 holes in coping for expansion bolts to fasten on backing logs.

December 2d to 15th.—Tore away old platform 42×7 feet in front of old bulkhead between Morton and Barrow streets.

December 6th.—Finished pointing wall.

January 24th to 29th.—Put on the backing logs in this section.

Received during the year, for filling in rear of wall, 20,752 loads of earth and ashes, 5,991 loads of which were received from Street Cleaning Bureau, Department of Police, at night.

CHRISTOPHER STREET SECTION OF BULKHEAD WALL.—November 27th to December 6th.—Drilled 57 holes in coping from new Piers 43 to 47, for expansion bolts to fasten on backing logs.

January 29th to February 6th.—Put on the backing logs from north side of Pier 43 (new number), to south side of Pier 47 (new number).

NEW PIER 43, NORTH RIVER.—December 6th to January 27th.—Sheathed gangway, cut out new door, and made general repairs to shed.

HOBOKEN FERRY.—December 8th to 26th.—Planked roadway 30×175 feet, from Ferry platform to West street.

NEW PIER 46, NORTH RIVER.—December 7th to January 9th.—Painted roof of shed.

APPENDIX—SCHEDULE No. 3 (A).

Materials used in Construction of New Wall, King street.

B. Piles and binding frames—

261 piles, at \$10.75.....	\$2,805 75
86 “ at \$22.50.....	1,935 00
98 “ at \$10.....	980 00
8,359 feet 5x10 in. spruce, at \$19.....	158 82
4,488 “ 3 in. “	85 27
350 1 in. treenails.....	8 40
100 1 in. “	3 60
12 wood screws.....	2 40
Gansevoort street yard.....	86 46
	—————\$6,065 70

C. Capping and platform—

7,416 feet 12x12 in. Y. P., at \$28.....	\$207 65	
5,326 " 4 in. spruce, at \$17.50.....	93 21	
1,051 " " " at \$19.....	19 97	
360 2 in. treenails, at 15c.....	54 00	
123 3 in. " at 30c.....	36 90	
550 1 in. "	8 25	
Gansevoort street yard.....	43 93	
	<hr/>	\$463 91

D. Stone filling—1,065 yards cobbles, at \$1.....	1,065 00	
597 " " at 90c.....	537 30	
853 " " at 80c	682 40	
385 " rip-rap, at 90c.....	346 50	
589 " " at 70c.....	412 30	
322 " " at 60c.....	193 20	
Gansevoort street yard.....	2 39	
	<hr/>	3,239 09

E. Béton blocks—312.2 yards, at \$11.10.....	3,465 42	
10 mattresses,.....	19 65	
28 barrels cement, at \$3.40.....	95 20	
7½ yards sand, at 79c.....	5 73	
7½ " broken stone, at \$2.20	16 50	
100 burlap bags, at 27c.....	27 00	
50 gunny bags, at 6½.....	6 25	
Gansevoort street yard.....	11 64	
	<hr/>	3,644 39

F. Concrete backing—

356¼ barrels Amer. cement, at \$2.83.	1,033 19	
50½ " Eng. " at \$3.40.	171 70	
260.9 yards broken stone, at \$2.20..	573 54	
105 " sand, at 79c.....	82 95	
Gansevoort street yard.....	49 66	
	<hr/>	1,911 04

G. Granite facing—

1,307.5 cubic feet, at \$1.30.....	1,699 75	
1,426.03 cubic feet, at 62c.....	884 14	
36.1 barrels Amer. cement, at \$2.83	101 88	
11 " Eng. " at \$3.40	37 40	
12 yards sand at 79c.....	9 48	
7 pounds oakum, at 7¾c.....	54	
Gansevoort street yard.....	18 87	
	<hr/>	2,752 06

I. Supplies to pile drivers and derricks.....	391 23	
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APPENDIX—SCHEDULE No. 3 (B).

Labor on New Wall, King street, from fortnight ending August 19th, 1876, to June 23d, 1877.

A. Dredging—8,982 yards, at 25c.....	\$2,245 50	
B. Foundation piles, binding frames—		
Christopher street.....	\$3,090 43	
Canal street.....	1 50	
Diver's bill.....	454 25	
Sawing piles.....	144 50	
		3,690 68
C. Capping and laying deck		1,385 62
D. Stone filling.....		569 95
E. Béton blocks—Christopher street.....	697 19	
Battery.....	110 08	
		807 27
F. Concrete backing—		
G. Granite facing—Christopher street.....	724 89	
17th street Yard, Jan. to June	167 70	
		892 59
H. Towing—69, at \$5.....		345 00
K. Superintendents of Masonry and Dock-building—		
Supt. White.....	583 31	
Supt. Murphy.....	249 98	
		833 29

APPENDIX—SCHEDULE No. 3 (C).

Cost of New Wall, King street, July 17th, 1877

	Materials.	Labor.	Total.	Cost per Foot.
A. Dredging.....			\$2,245 50	\$19 62
B. Pile-driving, heading, staylathing same and making and sinking binding frames..	\$6,065 70	\$3,690 68	9,756 38	85 20
C. Capping and platform.....	463 91	1,385 62	1,849 53	16 15
D. Stone filling.....	3,239 09	569 95	3,809 04	33 26
E. Béton blocks.	3,644 39	807 27	4,451 66	38 87
F. Concrete backing..	1,911 04	882 20	2,793 24	24 39
G. Granite facing....	2,752 06	892 59	3,644 65	31 83
H. Towing		345 00	345 00	3 02
I. Supplies to derricks and pile-drivers....	391 23		391 23	3 42
K. Superintendents of masonry and dock-building		833 29	833 29	7 28
			\$30,119 52	\$263 04

Letters refer to items in Schedules No. 3 (A) and (B).

APPENDIX—SCHEDULE No. 4.

Dredging done by Department Machines during the year ending April 30th, 1877.

		CUBIC YARDS.		TOTALS.	
		Mud.	Stone.	Mud.	Stone.
1876.					
May.	Pier at 24th st., N. R., north side.	800			
	“ “ “ south “	4,800			
	“ 25th “ north “	3,700			
	“ “ “ south “	900			
	“ 26th “ north “	3,200			
	“ “ “ south “	400			
	“ 30th “ north “	2,800			
	“ “ “ south “	4,200			
	“ 47th “ north “	2,000			
	“ “ “ south “	9,600			
	“ 46th “ north “	1,800			
	Pier No. 42 (new) “ “	4,000			
	For bulkhead, Canal st. section..	800			
				39,000	
June.	Pier No. 34 (new) N.R., north side	2,800			
	Pier at 26th st. “ south “	3,200			
	“ 34th st. “ north “	3,000			
	“ 35th st. “ “ “	3,600			
	“ “ “ south “	2,800			
	“ 47th st. “ north “	8,000			
	“ 57th st. “ “ “	2,400			
	“ “ “ south “	2,800			
				28,600	
July.	Pier at 37th st., N. R., north side	200			
	“ 38th st. “ south “	14,800			
	“ 57th st. “ north “	1,000			
	Bulkhead ft. 19th st. north river.	3,200			
	For bulkhead Canal st. section..	400			
	“ between old piers, 46 and 47 N. R.	2,600			
	Pier at 152d st., N. R.	1,200			
				23,400	
Aug.	Pier at 38th st., N. R., south side	600			
	“ 131st st., “ “	1,400			
	“ 26th st., E. R., north side	1,650			
	“ 21st st., “ south “	2,000			
	For bulkhead, Canal st. section.	900			
	“ between old piers, 47 and 48 N. R.	4,200			
	For bulkhead between old piers, 46 and 47 N. R.	1,550			
	For bulkhead in cut through old pier 46, N. R.	2,500			
				14,800	

APPENDIX—SCHEDULE NO. 4.—(Continued.)

Sept.	Pier No. 46, N. R. (old No.), north side.....	1,800		
	Pier No. 47, N. R., (old No.), north side.....	2,000		
	For bulkhead between old piers, 47 and 48 N. R.....	650		
	For bulkhead in cut through old pier, 46 N. R.....	2 500		
	For bulkhead, north old pier, 46 N. R.....	1,400		
				8,350
Oct.	Old pier, No. 46, N. R., north side.....	1,600		
	Old pier, No. 47, N. R., north side.....	12,400		
	For bulkhead in cut through old pier, 46 N. R.....	400		
				14,400
Nov.	Old pier, 46 N. R., north side.	400		
	“ 47 “ south “	3,675		
	“ “ “ end “	1,075		
	Pier at 17th st., E.R., north side	4,450		
				9,600
Dec.	Old pier, No. 47, N. R., south side	1,225		
	New “ 42, “ north “	2,250		
	“ “ “ “ south “	3,115		
	“ “ 43, “ “ “	3,350		
1877.				9,940
Jan.	New pier, 42 N. R., south side.	1,750		
	“ 43 “ “	390		
				2,140
Feb.	Old pier, 47 N. R., south side...	4,493		
	For new pier, 39 N. R.,.....	15,468		
	For bulkhead wall at Houston st., N. R.....	5,015		
	For bulkhead wall at Leroy st., N. R.....	3,820		
				28,796
March.	Old pier, 42 N. R., north side..	2,187		
	New pier, 34 N. R., south side..	1,315		
	Dump board, 12th st., N. R., south side.....	760		
	Dump board, 37th st., N. R., south side.....	3,114		
	For bulkhead wall at Leroy st..	2,750		
				10,126
April.	Old pier, No. 44, N. R., south side.....	6,267		
	Pier at 37th st., N. R., north side	2,800		
	For bulkhead wall at Leroy st..	1,719		
				10,786
	Total for the year.....			199,938

APPENDIX—SCHEDULE No. 5.

Gansevoort Street Yard—May 1st, 1876, to April 30th, 1877.

To stock on hand, May 1st, 1876.....	\$9,222 41 $\frac{3}{4}$
To purchased from May 1st, 1876, to April 30th, 1877..	10,218 20 $\frac{1}{4}$
<hr/>	
Total amount to be accounted for.....	\$19,440 62
By total issues, and expended from May 1st, 1876, to April 30th, 1877.....	8,879 67 $\frac{1}{4}$
<hr/>	
Total amount on hand May 1st, 1877... ..	\$10,560 94 $\frac{3}{4}$
<hr/>	

Recapitulation of Issues.

Tug <i>Louis</i>	\$263 58
“ <i>Alert</i>	441 09
“ <i>Manhattan</i>	625 52 $\frac{3}{5}$
Dredge No. 1.....	264 48 $\frac{1}{2}$
“ “ 2.....	364 64 $\frac{1}{6}$
“ “ 3.....	347 85 $\frac{3}{4}$
“ “ 4.....	160 48
Derrick <i>City of New York</i>	471 55
“ No. 2.....	321 93
“ <i>Joe</i>	143 10 $\frac{1}{4}$
Pocket scows.....	876 40 $\frac{3}{4}$
Deck scows.....	100 34 $\frac{6}{10}$
Pile Driver No. 1.....	87 63
“ “ 2.....	181 88 $\frac{5}{6}$
“ “ 3.....	287 19
“ “ 4.....	5 92 $\frac{1}{5}$
“ “ 5.....	127 98 $\frac{7}{8}$
“ “ 6.....	6 49 $\frac{1}{3}$
“ “ 7.....	249 60 $\frac{1}{2}$
“ “ 8.....	140 84 $\frac{3}{4}$
“ “ 9.....	89 01 $\frac{5}{6}$
Rapid transit.....	21 31
Department's office, 117 Duane Street.....	2 95
East Seventeenth Street Yard.....	77 58 $\frac{2}{3}$
Canal Street Section.....	387 20 $\frac{2}{3}$

Pier No. 1, North River.....	\$688 94 $\frac{7}{8}$
Clarkson Street Section.....	499 76 $\frac{1}{6}$
King Street Section.....	320 91 $\frac{1}{6}$
Repairs and supplies.....	333 54 $\frac{1}{2}$
Gansevoort Street Yard.....	240 39 $\frac{1}{4}$
Morton Street Section.....	386 46 $\frac{1}{2}$
Leroy Street Section.....	23 13 $\frac{1}{4}$
Houston Street Section.....	90 56 $\frac{5}{6}$
Surveyors.....	22 86 $\frac{2}{3}$
Christopher Street Section.....	226 44 $\frac{3}{4}$
Total.....	<u>\$8,879 67$\frac{1}{4}$</u>

To amount of pay-roll and labor account, from May 1st, 1876, to April 30th, 1877....	<u>\$8,714 71</u>
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Divided as follows:

Gansevoort Street Yard and Office— Foremen, storekeeper, day and night watchmen, labor- ers receiving cement, &c.....	\$4,810 74
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Blacksmith's Account :

Floating property.....	2,521 86
Repairs and supplies.....	115 92 $\frac{1}{2}$
Christopher Street Section.....	153 79 $\frac{1}{2}$
Pier No. 1, North River.....	93 57
Leroy Street Section.....	61 57
Canal Street Section.....	438 38
Morton Street Section.....	240 13
Houston Street Section.....	30 62 $\frac{1}{2}$
King Street Section.....	160 51
East Seventeenth Street Yard.....	70 30 $\frac{1}{2}$
Clarkson Street Section.....	11 80
Department Office.....	5 50
Total.....	<u>\$8,714 71</u>

APPENDIX—SCHEDULE No. 6.

East Seventeenth Street Yard—Granite on hand for Bulkhead Wall.

	CUBIC FEET.	PRICE.	TOTALS.
Dressed Stone. { Headers and Stretchers.....	9,775.9 @	\$1 30	\$12,708 67
{ Coping.....	5,985.0 "	1 87	11,191 95
{ Arch stones left over by shorten- ing Pier 1.....	2,160.89	4,152 97
Stone left over from bulkhead wall at Battery.....	1,529.87	1,321 93
Headers and stretchers, rough.....	1,463.3 @	39	570 68
Stone delivered under last contract....	889.26 "	62	551 34
Rubble blocks, in number.....	21. "	29 31	615 51
			<u>\$31,113 05</u>

The above in Lineal Feet of Wall.

" E " Course 1'.8 rise, rock face.....	197'.5	running feet.
" " " " pointed.....	429'.2	" "
" B, " C, " and " D " Courses 1'.10 rise, rock face.	881'.9	" "
" " " " " " " pointed..	396'.4	" "
" A " Course, rock face.....	296'.6	" "
" " " pointed.....	107'.8	" "
" A " Course, 4'. rise.....	34'.7	" "
Coping.....	518'.8	" "

REPORT
OF THE
TREASURER.

TREASURER'S REPORT.

JACOB A. WESTERVELT, *Treasurer pro tempore, Department of Docks, in account with the Mayor, Aldermen, and Commonalty of the City of New York, for and during the year ending April 30, 1877.*

	Debit.		
1876. May 1.	To balance, viz.: Amount of rents due and unpaid April 30, 1876, as charged upon leases of wharf property belonging to the City of New York, consisting principally of claims in the hands of the Counsel to the Corporation for suit prior to May 20, 1870, at which time the Comptroller transferred to this Department arrearages amounting to the sum of \$112,077.00.....	\$62,905 52	
	Contingent fund.....	1,000 00	\$63,905 52
1877. April 30.	To amount of rent accrued and charged from May 1, 1876, to April 30, 1877, to the respective parties by whom the same was payable.....		706,607 78
" 30.	To amount of requisitions of the Commissioners of Docks upon the Comptroller of the City of New York, drawn in sums to cover original bills or vouchers forwarded to him for payment, after being certified to by the Commissioners of Docks and officers in charge of the several works... To amount received as follows:		433,089 80
" 30.	Sales of old materials.....	468 50	
	Sales of maps showing water grants.....	15 00	
	Repairs, &c., for private owners.....	1,918 07	
			2,401 57
			\$1,206,004 67

TREASURER'S REPORT.--Continued.

1877. April 30.	Credit.			
By amount deposited with the Chamberlain to the credit of the Commissioners of the Sinking Fund, for the redemption of the city debt, being receipts from rents and collections from wharf property (excepting ferries, which are collected by the Comptroller), from May 1, 1876, to April 30, 1877				\$650,395 05
To account sales of old material.....				468 50
“ Dock Fund.....				1,933 07
				\$652,796 62
30. By amount paid “ANNUAL EXPENSE ACCOUNT,” including salaries of Officers and Appointees, rent and heating of offices, &c., viz.:				
Salaries—				
Eugene T. Lynch, Secretary.....		\$4,000 00		
William W. Burnham, Bookkeeper.....		3,000 00		
William M. Whitney, Chief Clerk.....		3,000 00		
William McConkey, Sup't of Docks.....		2,000 00		
James Fitzpatrick, “		2,000 00		
John M. Smith, “		2,000 00		
John Butler, “		2,000 00		
Otho H. Klemm, Clerk to Auditing Com.....		2,000 00		
Joseph T. Kelly, Assistant Book-keeper.....		1,800 00		
Thomas Early, Messenger.....		1,000 00		
George S. Hunt, “		521 64		
Eugene Conkling, Office Messenger.....		521 64		
William R. Thornton, Night Watchman.....		641 25		
Hugh Fitzpatrick, “		180 00		
				\$24,664 53

Advertising:

N. Y. Staats Zeitung.....	56 40
N. Y. Express Co.....	58 50
The Commercial Advertiser Association.....	51 20
The Evening Post.....	23 76
	<hr/>

189 86

General Expenses:

Manhattan Real Estate Association.....	\$9,350 00
Koster & Greene.....	75 00
John Boyle.....	7 00
Journal of Commerce.....	17 00
Knickerbocker Ice Company.....	67 27
William J. Farrin	11 42
James Watson.....	42 26
James Rodgers.....	39 17
Incidentals, cleaning offices, postages, &c.....	790 25
Baker, Voorhis & Co.....	4 00
Counting House Monitor.....	6 00
Thomas Duffy.....	7 00
A. A. Knudson & Co.....	15 00
	<hr/>

10,431 37

Stationery and Printing:

John S. Hulin.....	\$284 78
The Globe Stationery and Printing Co.....	38 35
J. Q. Preble & Co.....	21 46
Martin B. Brown.....	34 00
	<hr/>

378 59

\$35,664 35

Amount carried forward.....

\$688,460 97

TREASURER'S REPORT.—Continued.

1877.	Amount brought forward.....			\$688,460 97
April 30.	By amount paid for account of CONSTRUCTION.			
	<i>Advertising:</i>			
	N. Y. Staats Zeitung.....	\$116 65		
	The Commercial Advertiser Association.....	113 00		
	The N. Y. Express Co.....	178 50		
	The World.....	101 30		
	The Evening Post.....	23 24		
	Noah's Sunday Times.....	12 00		
	The N. Y. Herald.....	32 00		
	The Journal of Commerce.....	16 00	\$592 69	
	<i>Cement:</i>			
	F. O. Norton.....	\$660 00		
	Johnson & Wilson.....	5,240 45		
	S. L. Merchant & Co.....	16,500 00		
	James Brand.....	1,875 00	24,275 45	
	<i>Coal for Tugs, Dredges, &c.:</i>			
	James D. Leary.....	\$330 12		
	Lehigh Valley Coal Co.....	1,841 53		
	Hudson Coal Co.....	7,410 80		
	Thomas Davies.....	171 75		
	The Steamer Coal Co.....	203 50		
	Richard Heather.....	112 00	10,069 70	

<i>Contracts for Building Sheds, Piers, &c.:</i>			
James McIntire.....	14,522 16		
Robert Boyd, assignee of Joseph C. Brady.....	5,000 00		
John A. Bonker.....	16,616 04		
Ross & Sanford.....	1,428 00		
T. & A. Walsh.....	2,990 00		
		40,626 20	
<i>Cutting off Piles under Water, Laying Concrete, &c.:</i>			
Robert Rogers.....	\$4,740 87		
Thomas McIntire.....	29 70		
James McIntire.....	985 83		
I. Eugene White.....	1,021 16		
Ross & Sanford.....	98 25		
		6,875 81	
<i>Drawing Materials and Surveying Instruments:</i>			
Keuffel & Esser.....	\$355 68		
Stackpole & Bro.....	511 00		
		866 68	
<i>General Expenses, including Dredging, Phunbing and Gasfitting on new Piers, Insurance on Sheds, Storage of Piles, Taxes, &c.:</i>			
James O'Brien.....	\$111 46		
Stevens Institute of Technology.....	35 20		
W. B. Asten & Co.	679 80		
William Rainer.....	94 95		
J. C. Moore	2,064 30		
Broadway Insurance Company.....	101 25		
Guaranty Fire Insurance Company.....	168 75		
	\$3, 255 71	\$83,306 53	\$688,460 97
Amounts carried forward.....			

TREASURER'S REPORT.—Continued.

1877. April 30.			\$83,306 53	\$688,460 97
	Amounts brought forward.....	\$3,255 71		
	W. H. Bridgman & Co.....	337 50		
	American Fire Insurance Company.....	150 75		
	Hanover Fire Insurance Company.....	168 75		
	Thomas L. Thornell and David Adee.....	144 00		
	James Green.....	3 50		
	Incidentals.....	59 58		
	G. W. & C. B. Colton.....	7 25		
	City of Hoboken.....	212 92		
	M. Thompson.....	878 42		
	Robert P. Statts.....	7 27		
	W. & J. Tiebout.....	90 44		
	J. B. & J. M. Cornell.....	20 00		
	Amos C. Sherwood.....	10 00		
	J. D. & T. E. Crimmins.....	624 87		
	Moses S. Barrett.....	14 88		
	John Nicholson.....	12 89		
	The Morris & Cummings Dredging Company.....	4,283 20		
	Donegan & Reilly.....	134 77		
	G. N. Phelps.....	6 00		
			10,422 70	
	<i>Granite, Rip-rap, Broken Stone, and Sand:</i>			
	Patrick Brady.....	\$2,189 88		
	John A. Bouker.....	16,843 02		
	Chas. A. Harrington.....	5,211 80		
	Malcolm Ryder.....	1,684 45		
	John McC. Scully.....	703 70		
			26,632 85	

Iron and Steel:

Pierson & Co.....	\$620 20
W. & J. Tiebout.....	13 51
W. H. Wallace & Co.....	84 58

718 29

Lumber and Piles:

Watrous & Willson.....	\$4,416 70
Phelps & Kimpland.....	13,940 00
W. B. Ferguson.....	618 05
H. W. Gause.....	570 55
J. C. Moore.....	2,837 82
A. Ammerman.....	930 26
Drew & Bucki.....	3,575 17
Decker, Rapp & Co.....	282 80
Chas. B. Carman.....	150 00
Beard & Kimpland.....	4,687 50

32,008 85

Maintenance of Floating Derricks, Tugs, Dredges,

Scows, Pile-Drivers and Boring Machines, and De-

partment Yards:

Handren & Ripley.....	\$8,667 89
C. T. Raynolds & Co.....	46 63
John Jewett & Sons.....	105 00
N. Y. Belting and Packing Company.....	261 30
The J. L. Mott Iron Works.....	58 57
R. F. Seaman & Co.....	134 75
John A. Roebbling's Sons.....	13 20
John Petrie.....	50 66
Cook & Pulver.....	24 00

Amounts carried forward.....

\$153,089 22

\$688,460 97

TREASURER'S REPORT.—Continued.

1877. April 30.	Amounts brought forward.....	\$9,362 00	\$153,089 22	\$688,460 97
	Cartage of inspector's pump.....	3 00		
	W. B. Ferguson.....	203 32		
	N. Y. Steam Gauge Company.....	10 50		
	The Knickerbocker Ice Company.....	6 79		
	Wm. Page & Co.....	17 00		
	U. S. Customs charges.....	201 70		
	J. H. Calkin.....	56 00		
	Starbuck Bros.....	149 94		
	Chas. Cory & Son.....	8 21		
	J. S. Mundy.....	30 00		
	Eckford Iron Works.....	7 35		
	T. New.....	115 00		
	Coast Wrecking Company.....	75 00		
	C. & R. Poillon.....	53 93		
	The Screw Dock Company.....	485 00		
	Giroud & Sutton.....	1 50		
	E. Templer.....	14 95		
	Donegan & Reilly.....	21 59		
	Heroy, Marrener & Ward.....	8 00		
	Ridgwood Ins. Co.....	31 50		
	Lenox Fire Ins. Co.....	31 50		
	Clinton Fire Ins. Co.....	31 50		
	Guardian Fire Ins. Co.....	31 50		
	American Fire Ins. Co.....	31 50		
	Importers & Traders' Ins. Co.....	31 50		
	Mechanics & Traders' Ins. Co.....	31 50		

Jefferson Ins. Co.....	31 50	11,303 28
Nassau Fire Ins. Co.....	31 50	
Guaranty Fire Ins. Co.....	31 50	
Adriatic Fire Ins. Co.....	31 50	
American Exchange Fire Ins. Co.....	31 50	
Lorillard Ins. Co.....	31 50	
Pacific Fire Ins. Co.....	31 50	
Resolute Fire Ins. Co.....	31 50	
<i>Stationery and Printing :</i>		
The Globe Stationery & Printing Co.....	\$71 61	1,325 24
J. Q. Preble & Co.....	237 03	
The Graphic Co.....	320 00	
John S. Hulin.....	156 30	
Joseph Laing.....	154 00	
G. W. Pach.....	21 30	
D. Van Nostrand.....	8 50	
Wm. C. Bryant & Co.....	356 50	
<i>Supplies for Tugs, Dredges, Pile Drivers, &c., and Tools and repairing :</i>		
D. Hodgman & Co.....	\$381 20	\$5,381 75
Goodyear I. R. Glove M'fg. Co.....	184 80	
Josiah Macy's Sons.....	661 60	
Paul C. Coffin & Co.....	4,008 80	
Frederick Habirshaw.....	75 75	
Fairbanks & Co.....	7 00	
H. A. Rogers.....	7 00	
C. T. Reynolds & Co.....	55 60	
Amounts carried forward.....	\$165,717 74	\$688,460 97

TREASURER'S REPORT.—Continued.

1877. April 30.	Amounts brought forward.....	\$5,381 75	\$165,717 74	\$688,460 97
	Bradley & Smith.....	41 04		
	The Knickerbocker Ice Co.....	16 69		
	John Jewett & Sons.....	124 34		
	James McIntire.....	277 64		
	N. Y. Belting & Packing Co.....	69 36		
	F. H. Evans.....	200 00		
	John Tagliabue.....	26 50		
	R. Dudgeon.....	7 85		
	R. F. Seaman & Co.....	142 75		
	Girond & Sutton.....	75 00		
	W. B. Ferguson.....	142 24		
	David Clarke	2 95		
	Miners Oil Co.....	215 21		
	Jesse Oakley & Co.....	18 90		
			6,742 22	
	<i>Salaries—Commissioners of Docks:</i>			
	Salem H. Wales, President.....	\$6,500 00		
	Jacob A. Westervelt, Commissioner.....	3,000 00		
	Henry F. Dimock	3,000 00		
			12,500 00	
	<i>Salaries—Office of Engineer in Chief:</i>			
	G. S. Greene, Jr, Engineer-in-Chief....	\$5,874 99		
	Willard A. Nichols, 1st Asst. Engr.	3,150 00		
	William W. Maclay, Asst. Engr.....	2,500 00		
	Charlton B. Kid, do.	2,500 00		
	Thomas Murphy, Supt. Masonry Const'n.....	3,000 00		

James Guthrie, Supt. Construction.....	2,444	44	
Patrick White, Foreman Dockbuilder.....	2,000	00	
Robert P. Staats, Surveyor.....	475	80	
Moses S. Barrett, do.	1,024	20	
David T. Keiller, Draughtsman.....	1,800	00	
Thomas J. Long, "	1,200	00	
Charles Ward Raymond, Leveler.....	679	84	
John H. Staats, Transitleman.....	616	68	
Herman Winter, Eng. in Chg. Floating Property..	1,500	00	
James O'Brien, Roundsman.....	1,200	00	
			29,965 95
<i>Pay Rolls of Dockbuilders and Laborers on "General Repairs":</i>			
For the 2 weeks ending April 29th, 1876.....	\$186	97	
" " " May 13th, "	2	40	
" " " 27th, "	3	30	
" " " June 10th, "	115	02	
" " " 24th, "	91	86	
" " " July 8th, "	47	17	
" " " 22d, "	149	90	
" " " August 5th, "	3	60	
" " " 19th, "	9	60	
" " " Sept. 2d, "	143	22	
" " " 16th, "	284	63	
" " " 30th, "	130	02	
" " " Oct. 14th, "	474	03	
" " " 28th, "	378	97	
" " " Nov. 11th, "	21	00	
" " " 25th, "	81	30	
Amounts carried forward.....	\$2,122	99	
	\$214,925	91	\$688,460 97

TREASURER'S REPORT.—Continued.

1877. April 30.	Amounts brought forward.....		\$2,122 99	\$214,925 91	\$688,460 97
	For the 2 weeks ending	Dec. 9th, 1876.	170 15		
"	"	" 23d, "	332 78		
"	"	Jan'y 6th, 1877.	139 35		
"	"	" 20th, "	55 05		
"	"	Feb. 3d, "	18 98		
"	"	March 17th, "	135 24		
"	"	" 31st, "	12 40		
"	"	April 14th, "	213 65		
				3,200 59	
<i>Pay Rolls of Construction under New Plans:</i>					
	For the 2 weeks ending	April 29th, 1876.	\$2,832 99		
"	"	May 13th, "	3,861 76		
"	"	" 27th, "	4,676 46		
"	"	June 10th, "	4,473 28		
"	"	" 24th, "	4,478 48		
"	"	July 8th, "	4,712 33		
"	"	July 22d, "	6,124 33		
"	"	August 5th, "	6,670 63		
"	"	" 19th, "	7,015 23		
"	"	Sept. 2d, "	6,205 98		
"	"	" 16th, "	5,982 11		
"	"	" 30th, "	6,204 29		
"	"	Oct. 14th, "	6,644 14		
"	"	" 28th, "	6,907 83		
"	"	Nov. 11th, "	5,873 09		
"	"	" 25th, "	5,207 51		

TREASURER'S REPORT.—Continued.

Amounts brought forward.....			\$3,212 66	\$376,373 74	\$688,460 97
For the 2 weeks ending June 10, 1876.....			847 88		
" " " " 24, " ".....			838 73		
" " " " 8, " ".....			755 77		
" " " " 22, " ".....			754 98		
" " " " 5, " ".....			758 68		
" " " " 19, " ".....			708 29		
" " " " 2, " ".....			723 48		
" " " " 16, " ".....			733 30		
" " " " 30, " ".....			686 41		
" " " " 14, " ".....			735 48		
" " " " 28, " ".....			705 43		
" " " " 11, " ".....			809 82		
" " " " 25, " ".....			793 50		
" " " " 9, " ".....			753 09		
" " " " 23, " ".....			831 05		
" " " " 6, 1877.....			740 42		
" " " " 20, " ".....			811 17		
" " " " 3, " ".....			710 40		
" " " " 17, " ".....			807 80		
" " " " 3, " ".....			781 42		
" " " " 17, " ".....			852 05		
" " " " 31, " ".....			917 95		
" " " " 14, " ".....			801 95		
			21,051 71		
			397,425 45		

April 30.

By Dock and Ship Rent:

Allowance made to David Tracy on rent of piers under lease to him for occupation by the city of berths for public bath houses, viz.:—

At pier foot of Bethune street, North river..... \$700 00
 " " West 35th street, North river.... 300 00
 " " East 37th street, East river..... 300 00
 " No. 51, East river..... 312 50

1,612 50

Allowance made to Thos. J. Madge from rent of easterly half of Pier No. 18, East river, consequent upon the city being unable to give possession of the outer end of said half.....

150 00

Allowance made to Frederick Broege from rent of pier at Fifty-first street, North river, consequent upon its free use being obstructed during the recent repaving of said street.....

50 00

Allowance made to Fredk. Habkemeyer from rent of pier at Little Twelfth street, for loss sustained by Department failing to furnish necessary depth of water agreed.....

542 42

Allowance made to A. Van Santvoord from rent of pier foot of West Twenty-fourth street, North river, on account of occupation by excursion boat *Wm. Cook*, as per agreement, previous to leasing pier at auction....

250 00

2,604 92

By balance, viz.: Amount of rents remaining uncollected, consisting principally of claims in the hands of the Counsel to the Corporation for suit.....

116,513 33

Amounts carried forward.....

\$116,513 33

\$1,088,491 34

April 30.

TREASURER'S REPORT.—*Continued.*

April 30.	Amounts brought forward.....	\$116,513 33	\$1,088,491 34
	Contingent fund.....	1,000 00	117,513 33
	To balance brought down.....	\$117,513 33	\$1,206,004 67

NEW YORK, April 30th, 1877.

WILLIAM W. BURNHAM,
Bookkeeper.

Respectfully submitted,

JACOB A. WESTERVELT,
Treasurer pro tempore.

